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PREFACE

THIS IS a very general book on Indian prehistory, intended for the educated layman interested in the development of Indian culture from its earliest beginnings to the dawn of history—that is, when written records become available or when we are certain of the time and place—and important events in the lives of personalities like the Buddha and Mahavira.

The book may also be useful to students in schools and colleges.

Keeping this aim in view, detailed documentation has been intentionally avoided. Those interested in checking the statements made here or in pursuing the matter further, may see the second edition of my *Prehistory and Protohistory of India and Pakistan*. However, a select and up-to-date bibliography has been included. Likewise, all *technical* details have been kept to the minimum, or if used, simple explanations have been first provided. However, those desirous of further details may see my *Stone Age Tools, their Techniques* (1964) and *Some Aspects of Prehistoric Technology* (1970). My estimate of the new conceptual approaches will be found in *New Archaeology; Its scope* and *application* in *India* (1977).

No attempt has been made to make the present book purposefully 'interesting,' which is a comment generally made by some of my friends while reviewing the earlier edition. After years of work, I have come to the conclusion that *from the data available at present*, almost all the cultural manifestations in India, including the Neolithic and Chalcolithic ones and beginning from about 2500 BC, have to be regarded as 'Coloniza-

tion,' understanding this much abused word in a good sense. Hence the matter has been presented under this heading, and later when an opportunity came, a brief paper was separately written on this subject for *World Archaeology*.

It may be mentioned that this idea of 'Colonization' is not new or foreign to the Indian tradition as preserved in the Vedic and Puranic literature. Hence at the end of this book 'Colonization' as emerging from the archaeological evidence has been compared with that deduced from the literary evidence. However, since the ethnological point of view has also to be taken into account before reaching any final solution this too has been cited.

Originally, the various illustrations were selected to illustrate the basic techniques in the preparation of stone tools; to illustrate their main forms; to illustrate their distribution in time and space *all over* India with a view to emphasizing the *underlying uniformity of material culture* during the four Stone Ages (Early, Middle and the Upper—the Palaeolithic, with its three subdivisions and the Mesolithic and the Neolithic); and to understand *clearly and immediately* the development of regional differences in protohistoric times the main pottery groups were to be illustrated in *colour.* Thus we have, in chronological order, the following groups: *1.* Shahi Tump, Baluchistan; *2.* Pre-Harappan, Kalibangan; *3.* Harappan, MJD., Harappa, Lothal; *4.* Cemetery-H, Harappa; *5.* Ochre Coloured Ware, U.P.; *6.* Ahar, Banas, E. Rajasthan; *7.* Kayatha, Central India: *8.* Navdatoli, Central India; *9.* Jorwe-Nevasa, Maharashtra; *10.* Early and late Neolithic, Andhra, Karnataka, South India; *11.* Painted Grey Ware, Punjab, North Rajasthan, Uttar Pradesh; and *12.* Megalithic, Andhra, Karnataka, South India. But owing to the increasing cost, this plan was abandoned at the last moment.

Other illustrations have been in half- tone or line drawing as would best serve the purpose of conveying the meaning to the reader.

The various maps indicate the general distribution pattern of the Stone Age cultures or the Chalcolithic cultures. In these excepting the most important, other site names have been omitted.

While the book was being sent to the press, the *Times of*

India (30.1.73) published a report of a paper, published in *Science*, by Dr Rainer Berger of the University of California, Los Angeles, saying that according to the improved method of dating bones by C-14 method, the cow and pig seem to have been domesticated in Europe around 9000 BC, the sheep/goat in the Middle East around 7200 BC, and the horse in Ukraine before 4350 BC. These are as yet regarded as preliminary findings and need to be corroborated by many more specimens from other sites, and subjected to this method of direct age determination.

What were the exact causes behind this "colonization", agricultural dispersal from Western Asia and Greece into Europe and Northern Africa on the one hand and from the grassland fringe of the Western Asiatic woodlands into the river flood plains and thence across Iran into the Indian sub-continent,—owing to environmental change, depletion of agricultural resources by overuse or over-population—is very difficult to decide as Karl Butzer, after a very thorough, at the same time, a multidimensional discussion of environment and archaeology right from the Early Pleistocene through the Late Pleistocene into the early Holocene, not only in one continent, but in all the four continents—Asia, Europe, and Africa, and even Australia—has to admit. Says he, "Diffusion of even a single trait is a complicated process, that is difficult if not impossible to understand in any prehistoric context. The nature of agricultural dispersals is by far the most complex of any such problem. Whether we are dealing with migrations of races or of ethnic groups, of subsistence patterns or of ideas, is wholly unclear at this time. Archaeological research is still preoccupied with tracing, recognizing and dating the movement of agricultural traits, across the face of the Old World, and any comparison of the cultural inventory between sites of cultures separated in time, or space remains casual and subjective. "Consequently the real character of agricultural dispersal continues to elude us." (Karl U. Butzer, *Environment and Archaeology*—An Ecological Approach to Prehistory, 2nd edition, 1971, p. 567).

I wish to gratefully acknowledge the help I have received, while preparing this book, from many friends in the Archaeological Survey of India, State Departments of Archaeology, various universities and, above all, from my colleagues at the

Deccan College. Since much of the matter discussed in this book has not yet been fully published anywhere else, I could not have included it here without their generosity.

My thanks are also due to Sarvashri P.R. Kulkarni, S.K. Kulkarni, V.K. Nagpure, Y.S. Rasar, R.B. Warke, R.B. Sapre and G.C. Padwal for the various maps, drawings and other illustrations included in this book.

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CHAPTER 1

INTRODUCTION

What is Prehistory

THE IDEA or concept of prehistory is barely 200 years old. And so also is the word prehistory; it was first used by M. Tournal in 1833.

When first used, prehistory was supposed to tell us the history of man before writing was known. This is the important distinction between history and prehistory. While the former is based on or written with the help of contemporary and later accounts of things, events and persons, the latter has as its basis any material object made by man in the past, before writing in any form was known. Thus the actors or witnesses in history are always conscious of what they are saying or relating, though this account might be biased or one-sided, or even untrue. In prehistory, the things which are otherwise mute—the various objects—begin to speak in the hands of man. These are unconscious witnesses.

And here lies the charm of prehistory. Depending upon a person's interests and his mental (and even physical) background, a thing will begin to relate its story. To a man in the street, a stone tool of the far away past will be like any other stone; a broken pot, a thing of no value. However, one who understands or has seen or handled stone tools, the same stone might become a relic of Early Stone Age, some lakhs of years old.

However, it is not the only things made by man, but also things associated with man, which have become and are becoming increasingly important and significant. Thus, not only

the stone tool mentioned above tells its story to an archaeologist, but the earth or soil in which it lies, if carefully collected and examined by a scientist—chemist, geologist, palaeobotanist—might reveal the climatic conditions under which it was formed, and the kind of vegetation that existed when the man who had shaped that stone lived there or in the vicinity. Thus step by step, piece by piece, the story of man's past is reconstructed from anything made by man or associated with man. Unlike written history, the scope for a prehistorian is immense. The more versatile he is, the more perspicaciously he has to interpret the object, or to get its interpretation by his colleagues from the arts and sciences, applying greater or deeper insight into the simple stone tool made by man in the dim past.

Again unlike the historian, a prehistorian need not confine his attention to only one particular region. He can, provided he has the means, opportunity, and scientific background, work on the prehistory of any region of India, or even that of the world. It was thus that the present writer first explored the Sabarmati in Gujarat, the Godavari in Maharashtra, the Narmada and others in Madhya Pradesh, and then the rivers in South India, Himachal Pradesh, Kashmir, Bihar, Bengal, Orissa and Assam. This aspect of a prehistorian's job is of no less importance. He works and walks with nature. He needs not be confined all the time—though this is also necessary—in a cloistered room. Enjoying the beauty of nature; he should be prepared to undergo all the hardships required of an explorer, an engineer or a soldier. The results are always rewarding. In this profession there is no room for any parochialism or bias for any particular country.[1] One truly becomes a citizen of the world and begins to realize its essential oneness. The prehistorian

[1]Interesting corroboration of the above statement made some three years ago (1972), is found in Professor J. Desmond Clark's the 1974 Huxley Lecture, at the Royal Anthropological Institute, London. "Interest in human origins," he says, "so transcended nationalistic attitudes that these (interdisciplinary) teams are also now international in outlook and composition and work in the closest collaboration. This is indeed a far cry from the days when prehistorians often worked in secrecy and these African discoveries have assisted in no small measure in breaking down old restrictions and dog-in-manger attitudes."

understands how with the increase in man's wants, differences among men grow, how man, by natural selection and increasing awareness, gradually develops or evolves as a true human being, who not only makes his tools but thinks about himself, his surroundings and the future. As Sri Aurobindo has said, this process is not yet complete, since man is on his way to perfection—the Life Divine.

This then is the art of prehistory, to reveal or reconstruct man's past with the help of things made by and associated with man. The richer and fuller this prehistory is, the more systematic is the prehistorian's work, the greater also the collaboration he gets from scientists, ethnographers and anthropologists.

Briefly the sources of prehistory are the things made by man —such as objects of stone, bone, wood, and copper, bronze, iron, as well as pottery, ornaments, tools, weapons and dress. The interpretation of all these is initially made by an archaeologist —a person who systematically collects and studies old objects —but for a fuller interpretation, an archaeologist has to seek the help of natural scientists—chemists, botanists, geologists, physicists, astronomers, ethnologists, anthropologists, anatomists, palaeontologists and statisticians.

The range or scope of prehistory will vary from region to region or country to country, depending upon when written documents are first available. Thus in Egypt and Iraq (Mesopotamia), history begins around 3000 BC. In Crete, around 2000-1500 BC, and so would it be in India (provided, of course, the Indus script is read). In England, anything before the Roman occupation—that is, from Eoliths (natural stone tools) up to Druids, i.e., arrival of the Romans in the 1st century BC (*c.* 100 BC), is regarded as prehistoric, whereas in America, everything before Columbus is prehistory.

There is a strong school of thought in India which would place India in a similar category, for here if we leave out the hitherto undeciphered pictographic script on the numerous tablets of steatite, faience and copper, then the earliest writing we have, are the edicts of Asoka. These are dated *c.* 260 BC (*See*, however, below the section relating to proto-history.)

Thus all our knowledge or accounts of India and Indian life before Asoka would be regarded as prehistoric, that is, the period from *c.* 600 BC (strictly 260 BC) to 3000 BC.

The Three Ages

Now depending upon the objects found (in a particular country), this long period was first (1843) divided into three Ages: the Age of Stone, the Age of Copper/Bronze and the Age of Iron. While postulating or visualizing the existence of these three 'Ages,' it was meant or understood that during the Age of Stone, man primarily used tools and weapons of stone, besides those of wood and bone, but anything made of copper/bronze or iron was unknown. Except in one or two cases the objects made of wood have not survived, since wood is an easily perishable material. The same is the case with bone, except where it (the bone) happens to get mineralized—loosely called fossilized. Fossilization might take place owing to several reasons, the most common being the situation where the bone lies in deposits containing plenty of lime or sand of a similar nature.

At a site in South Africa, only fossilized bones of extinct animals have been found. Hence its first discoverer, Dr. Raymond Dart, has postulated a separate and distinct existence of the Age of Bone. This 'Bone Age' was before the Age of Stone. However, this view is not universally accepted, nor have such used long bones of animals been found at any other site, either in Africa or anywhere else.

During the Second Age of Copper/Bronze, man discovered the use of copper, though the use of stone was not given up. However, iron was still unknown, though natural iron might have been unknowingly used in a few instances.

Iron came to be discovered around 1500 BC and since then the Iron Age is said to have begun. As early as 1843 it was realized by Worsaee, the first systematizer of this Three Age concept, that this transition from Stone into copper/bronze, and from copper/bronze to iron did not take place simultaneously all over the world. There were certain favourably situated regions where man first took to copper, but in others copper was used much, often thousands of years later, and iron still later. The classic examples are of the Mayas of Mexico, who built amazingly large monuments without the use of metals at all, right up to the 15th century AD until the Spaniards discovered them. In contrast, many of the preliterate tribes of Africa, South Sea islands and Australia, including New Zealand, until the Europeans stepped in, were literally in the Stone Age, not knowing

agriculture or domestication of animals such as the cow/buffalo. India was and is no exception to this general statement. When parts of Western and Northern India enjoyed a well developed city civilization, employing fine grade bronze tools and weapons around 2500 BC, the rest of India was still in a Stone Age, and took another 500 to 1000 years to acquire the full use of these metals.

As knowledge about the past advanced, this Three Age concept underwent a few necessary changes. First, the Ages become four: the Old Stone Age, the New Stone Age, the Copper/Bronze Age and the Iron Age. This revision was necessitated because it was found that certain stone tools were quite different. These were partly or wholly ground or polished. Secondly these were found in geological and other deposits which were certainly much later than those in which rough or chipped stone tools alone were found.

With this development in broad division of the Stone Age, as discovery followed discovery, particularly in western Europe, in the classic land of Southern France, it became necessary to sub-divide the old Stone Age itself into three further divisions: 1. Early Stone Age or Early Palaeolithic; 2. Middle Palaeolithic; and 3. Late or Upper Palaeolithic. Initially a number of local site names were given to the stone (and bone) industries from France, England and Germany. While this was done with a view to emphasizing the particular feature or character of the bone or stone tools, it was often thought that, that was indeed the chronological development not only in southern France, but in many parts of the world, where similar discoveries were being made. This application of the local technological/chronological development to sites all over the world was found to be wrong or unscientific and gradually given up. Still a few site names—such as Clactonian, Levalloisian and Mousterian—have persisted, and are used outside England and France, but then what they signify in any chronological development but only the existence of peculiar technological features. Thus when we use the term Clactonian in India, we mean only the presence of flakes with prominent bulbs of percussion and a very wide angle, more than 90°. So also the terms Levalloisian and Mousterian.

This term, i.e. 'la protohistorique,' was first coined by the

French, and means a period in a country's history when written documents are found here and there but not everywhere. It is a period before history.

In India, we fulfil this definition. First, we have evidence of writing in Sind, the Punjab and Gujarat, though as yet undeciphered. Secondly, though the Vedic literature was in an oral state up to the 4th century AD or so, this literature is the source of our social, political, religious and literary life today. It is a living prehistoric past—a unique feature in world's history. Thus this source can and should be legitimately included in or regarded as protohistory. Its range will vary, depending once again on the dates one assigns to the Vedic literature. We may, for our own purpose, have to leave out the history gathered from Vedic literature for the simple reason that prehistory deals with or is dependent on material evidence, whereas the evidence supplied by the Vedic literature cannot be seen though one might visualize it. However, contemporary with much of the Vedic literature there is the evidence from all over India about the early metal-using communities. This is certainly prehistory in one sense, because so far there is no trace of writing in any case. But since this period also runs parallel with the Vedic literature, it has been included under protohistory. According to another view, since one cannot decipher any writing of the period from *c.* 260 BC to 5,00,000—that is, when the things made by man are first found—this period is regarded as the entire length of Indian prehistory.

Some scholars make a little concession and would raise the lower limit to *c.* 600 BC because this was the period when the Buddha and Mahavira lived. And they are certainly historical figures, though as yet we have no writing of the period.

A third school of thought, however, thinks that the Vedic literature beginning with the *Rigveda* and ending with the Sutras of Gautama, Baudhayana and Apastamba should be included either in history or at least in protohistory, and it would classify the diverse topics dealt in them under such headings as Political and Social institutions, Religion, Economy and so on. Though these inferences are certainly legitimate we cannot be sure of the objects used or described, and hence these have to be left out from any account based on archaeology.

Economic basis of Prehistory

There is one way of studying prehistory, viz. observing the changes in the material used from time to time or from age to age and relating these changes to those in the techniques or methods employed in making the objects. Briefly, this could be called the techno-typological method or system. However, it was soon found that the changes in the material, and often in the technique used in shaping the material, went hand in hand with the way man eked out his livelihood. This was also indicated by the study of several primitive, or preliterate peoples in Africa, Australia and even India. Thus arose a school of prehistorians who would lay more stress on the way man subsisted or lived from age to age than on the material used by him for eking out his livelihood. This school would view the development of man and his culture (the way of living) as follows: I. the Age of Savage or Barbarian or the Food-Gathering Stage, divided into: (a) Incipient Food-Gathering, (b) Advanced Food-Gathering; II. Food-Producing Stage, again divided into: (a) Incipient Food Production, (b) Settled Village-life; and III. Urbanization. This is the economic view of the development of man. For some seventy years this has held the field and come to the forefront, only when a prehistorian like the late Professor Gordon Childe accepted it and vigorously popularised it. Among the fresh converts to this school of thought were Professor Braidwood and many Americans. It also became the sheet anchor of scholars in Russia and other communist countries, for it really suited the communistic philosophy. However, as knowledge advanced and contribution from the various sciences employed in the service of archaeology began to yield more precise information, many of the preconceived ideas of the development of man and his culture began to be re-examined. Now it is no longer universally held that the early man was a nomad, that he lived on whatever he got, that he had no house—natural or artificial—and that the domestication of animals and plants first took place in parts of Western Asia, or what was called the Fertile Crescent, or the Piedmont Zone from Mesopotamia or Turkey in the west to Iran in the east. These views are now regarded as over-simplified generalizations though there are some scholars who would still emphasize one or two aspects of them.

All these developments have sought to make prehistory richer,

and its study almost all-embracing, for, founded on geology, and first illuminated by ethnography and ethnology, prehistoric archaeology now seeks the help of astronomy, physics, chemistry, palaeobotany and palaeontology, and other disciplines such as study of blood groups.

The inner or spiritual aspects of man are still regarded as outside the archaeologist's purview. However, it is now being slowly conceded that not only during the Broze Age in Britain (and elsewhere) had man set up 'solar and lunar observatories' for watching the movements of stellar bodies, but much earlier, some 20,000 years ago, man had recorded movements of the moon on bone and stone tools found in some of the cave shelters in France. If this is what archaeology is revealing, then is the Indian view of the human cycle so well demonstrated by Sri Aurobindo wrong? Is it not true that our material progress is not matched by our mental and spiritual progress? And that a true and deeper equality among men will dawn only when man rises to this spiritual development?

Thus prehistory has a far nobler and higher aim than to merely unravel the material progress of man and his institutions. Our approach to the subject cannot, therefore, be merely archaeological and chronological. It should take into account the subsistence pattern of man's life, as well as the environment in which he lived (wherever such data are available in India).

Before narrating what Indian prehistory is or what pre-history has done for India, it might be interesting to relate briefly what prehistory has achieved in other parts of the world so that the reader can appreciate the role of prehistory in our life and education today.

World-Prehistory

This rapid review naturally begins with Europe, particularly western Europe, because it was here that the first discoveries were made in 1839, and the subject developed since then.

Europe

Compared to many parts of the world, Europe is in a particularly unique position as far as the knowledge of man and his culture and environment are concerned. Not only were the first discoveries made here, and the subject developed, but because

Europe enjoys what is known as the continental climate, the records of man and his environment are extremely well-preserved there. That is not the case with much of Asia, Africa, Australia and even America.

After the establishment of the prehistoric character of the stone tools found in the Somme Valley in France by Boucher des Perthes in 1839, rapid progress was made in revealing Europe's, particularly western Europe's, dim past. The main outlines, with the climatic changes and the corresponding changes in the animal and vegetational world, were known by the beginning of the 20th centnry. The various stone industries were called by the original type sites, specially from France, as most of the work was done here.

Just before the Second World War and after, scholars all over Europe got engaged in revising the chronology by careful stratigraphical work and by trying to search for the habitation sites of early man and his successors. Thus knowledge of European prehistory, which was already rich, is becoming richer. It has increased both in depth and extent.

First, with regard to the climate, it was formerly believed that there were four major glacial phases, known respectively as Günj, Mindel, Riss and Würm (after four small rivers in the Alps). Now there appear to have been a series of rapid alterations of glacial and interglacial or interstadial periods, few of which seem to have been of long duration. Such a view is also borne out by multiple weathering horizons in the loess of Central Europe and the numerous variations in the climate of Netherlands and elsewhere as deduced from pollen grains.

Throughout the Pieistocene there was an overall tendency towards a lowering of the sea level. Such a general lowering was not, however, uninterrupted because the fluctuations of the ice sheets caused remarkable variations in relatively short time ranges. The extent of these glacio-eustatic fluctuations has been partially determined by surviving ancient shore lines, by estimations of the water volume of existing ice sheets in the north and south, and by calculations of the water content of the Pleistocene glaciers.

Geological deposits indicating high sea levels are particularly well-preserved along the west Mediterranean shores. Of the

seven likely raised sea beaches, the one between 6-8 metres has been dated to *c.* 80,000 BP by thorium-uranium method.

Associated fauna recovered from these sea levels have also been employed for climatic inferences and correlations.

It is also held that 'domestication of animals,' that is close *symbiotic* relationship between man and animal, may have occurred in the earliest times of man's history.

Though because of various difficulties it has not become possible to establish an absolute chronology for the whole of the Pleistocene, still the climatic stages of the Wurm are now relatively well established and precisely dated by C-14 methods.

Various vegetational patterns have been best worked out with the help of pollen analysis for Holland and Britain and these have been correlated with the various climatic changes.

These have indicated the following dates: Mousterian, *c.* 55,000 BP—30,000 BP; Chatelperronian, *c.* 35,000 BP—25,000 BP; Aurignacian, *c.* 32,000 BP—22,000 BP; Gravettian, *c.* 28,000 BP—21,000 BP; Solutrean, 21,000 BP;—17,000 BP; and Magdalenian, *c.* 17,000 BP—10,000 BP.

Man himself or his presence is indicated by his tools. The earliest of these are now reported from Vertesszöllös, Hungary; and Vallonnet, high terrace gravels of the Somme and the Gerrone in France. All these consist of unspecialized pebble and flake industries.

The earliest undoubted evidence of man himself is provided by the mandible from the Mauer Sands near Heidelberg. The jaw has been variously classified as *Homo erectus*, *Homo sapiens* and *Homo sp*. Though the associated fauna has been ascertained to belong to an interglacial period (Cromerian) there is no definite evidence of any industry. Probably it should be of pebble-and-flake variety.[1]

From these Early Pleistocene industries developed the later Middle Pleistocene pebble and flake tools from Swanscombe and Clacton-on-Sea, and the Abbevillian. It has been dated by

[1]This is supported by the recent work of Alfred Rust. In 1953 he found a non-handaxe assemblage of artefacts in the Grafenrain sand-pit which yielded the Mauer Jaw. The collection consists of cores, unretouched flakes, scrapers on thick flakes and pointed artefacts. For details, *see* A. Rust's, *Artefakts aus der Zeit des Homo Heidelbergensis in Sud—und Norddeutschland*, 1966, Bonn.

associated fauna to a Mindel interstadial, though some scholars doubt whether this handaxe tradition played an important part in the later widespread development of the handaxe tradition.

The Acheulean handaxes which were formerly grouped into seven stages by Breuil, are now combined into three: Early, Middle and Late. These have now been placed in the Hoxnian interglacial and correlated to the 30-metre terrace of the Somme. From this it is also inferred that some kind of land bridge between England and the Continent had emerged at this time. An important discovery made during this period was at Torralba in Spain. Here not only handaxes, but cleavers, and many made on quartzite, flint and limestone, and objects made out of bone, ivory and wood were recovered from a level/terrace consisting of sands, gravel and silt.

The character and distribution pattern of the Levalloisian industries have become clearer. At Fontechevade, France, a mixed flake industry—Levallois and Mousterian—is associated with the physical remains of *Homo sapiens*. The Mousterian of France is now held to include four major industrial groups, whereas excavations at Combe Grenal have supplied precise knowledge of the industries and climatic dating.

Of these French industries, only the typical Mousterian and the Charentian are believed to be associated directly with burials of the classic Neanderthal type. And the Mousterians of Europe (as of Western Asia) were perhaps the first to bury their dead deliberately. And the most important conclusion about the Neanderthal man is that he did not have a stooping posture. In certain areas this man practised some form of cult involving the skulls of cave bear.

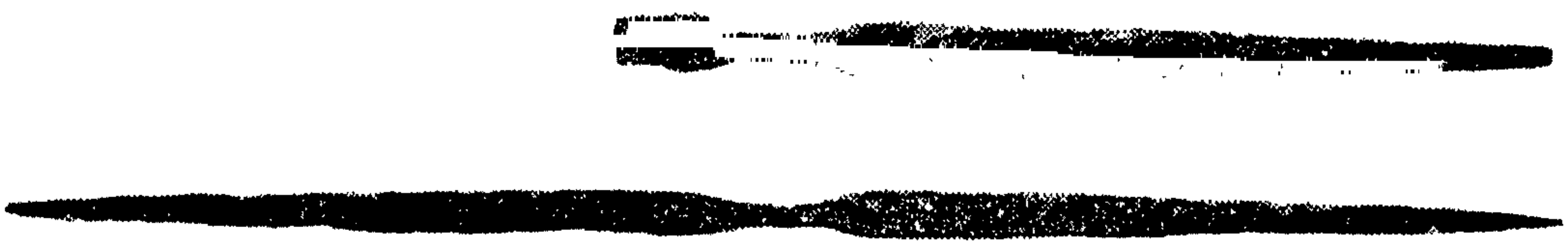

Fig. 1. Maglemosian (Mesolithic) wooden bows with shaped grip from Holmegaard, Denmark (From Graham Clark, *Stone Age Hunters* illus. No. 82).

In the Upper Palaeolithic, besides precision dating of industries and other associated objects, welcome addition has been

made to our knowledge of the period by the discovery of musical instruments. These are of two types, deer phalange whistles with a hole on one surface and hollow bone pipes. These are generally interpreted as decoy whistles, or anthropomorphic idols.

All these Upper Palaeolithic cultures with their rich and varied art and industries gradually disappeared, because with the recession of the ice, the traditional cave sites were no longer necessary and gradually abandoned. On the contrary, with the increase in the forested area, the nature of occupation changed, and so also man's equipment. Not only the forested areas, but coastal areas were occupied. And of this coastal culture called

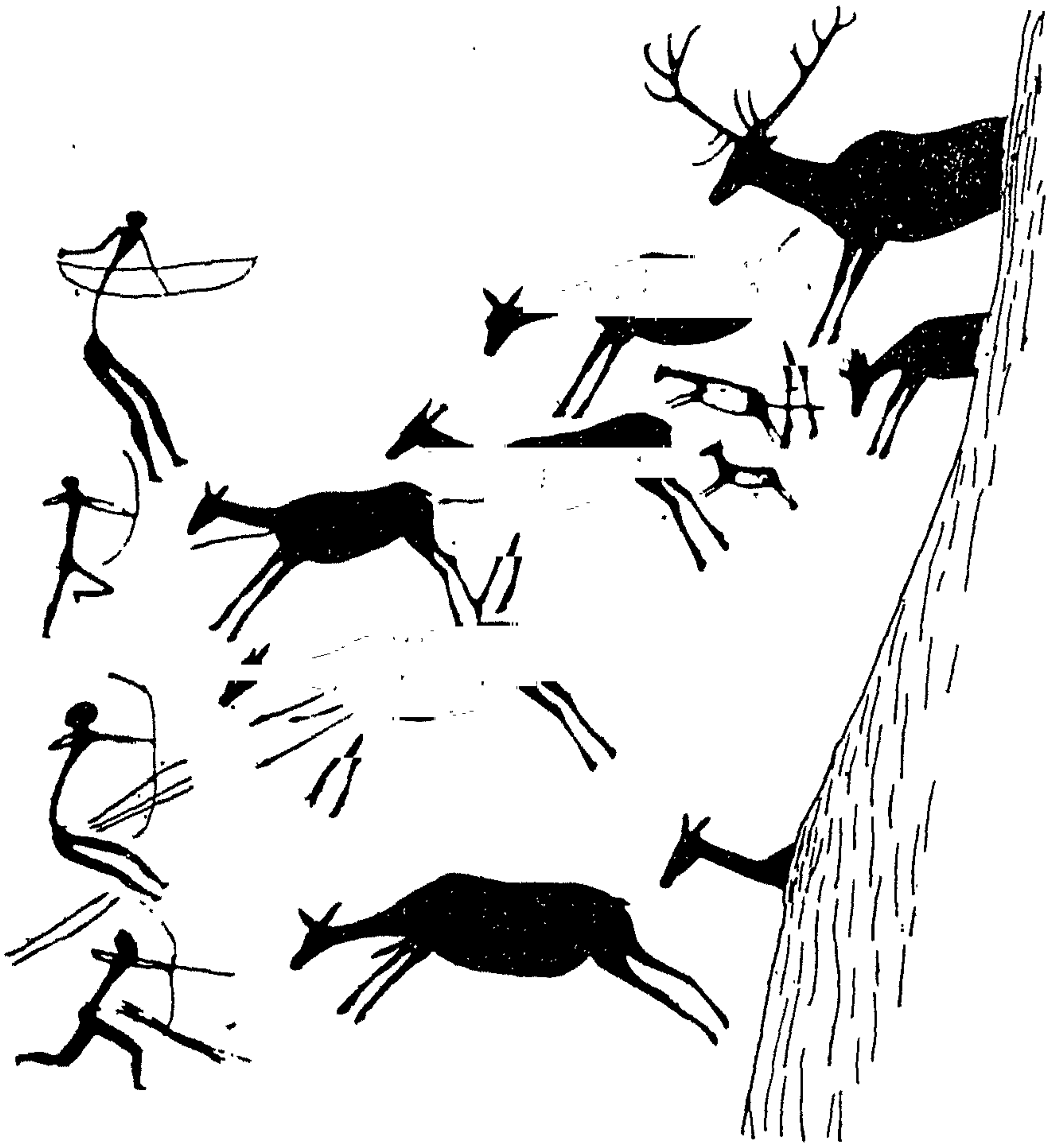

Fig. 2. Hunting with bow and arrow. Painting from Cueva de los Caballos, Spain (From J.G.D. Clark, *Prehistoric Europe,* 1952. Fig. 11).

the 'Maglemose' or the 'Big Bog' culture, the site of Star Carr, England, has become famous, because of the insight it provides

into man's ways of life at this time (*c.* 7,300 BC). Besides a rich microlithic industry it has yielded different kinds of bone tools and weapons (point, scraper, barbed points of antler elk, antler mattocks), wooden paddle, birch bark container. From the nature of the animal remains, and the seeds of various plants, it is inferred that the site was occupied mostly in the winter season. And here has been found the earliest remains of dog in the Old World. The use of bow and arrow is documented for the first time by the painted rock-shelters of Eastern Spain.

However, as said at the outset, the quest is more and more for the recovery of habitation sites. And sites much earlier than Star Carr have been found in Central and Eastern Europe. In the former, remains of summer huts have been exposed at Dolni Vestonic in Moravia. One hut was 9×15 metres and contained 5 hearths; another, recently excavated, was circular and 6 metres in diameter. It was built on a slope and had a retaining wall of limestone blocks which supported roof posts. Accumulation of mammoth bones suggests their having been stored for building material, and also for fuel. Tusks stuck into the ground formed slight walls. In addition to the quantities of lithic tools of Gravettian type, there was plenty of evidence of artistic activity, engraving and modelling in bone and ivory, as well as modelling and even baking of clay mixed with powdered bone. The famous Venus figurine was actually found in the central fireplace of the settlement. Other important sites are Predmost, Pavlov and Brno, and that of Pavlov has been carbon dated to *c.* 25,000 BP.

Greece and peninsular Italy were so far believed to be devoid of Early Stone Age material. A few recent discoveries on the contrary indicate that this region might have served as a link between Western Europe and Western Asia and the Levant, at least at times when there was a low sea level.

Eastern Europe and Russia have so far yielded scant information relating to early occupation by man. The most reliable evidence comes from the sites of Satani Dar in Armenia. Here at the foot of Mt. Artin, Chellean and Acheulean handaxes, flakes and choppers made on obsidian and basalt have been reported.

But this lack of early material is compensated by the discovery at Molodova I a house plan measuring 10×7 metres. This

earliest house was made entirely of mammoth bone and ivory. It contained 15 small hearths. The earliest industry is Mousterian and one of the levels has a carbon date of 44,000 BP.

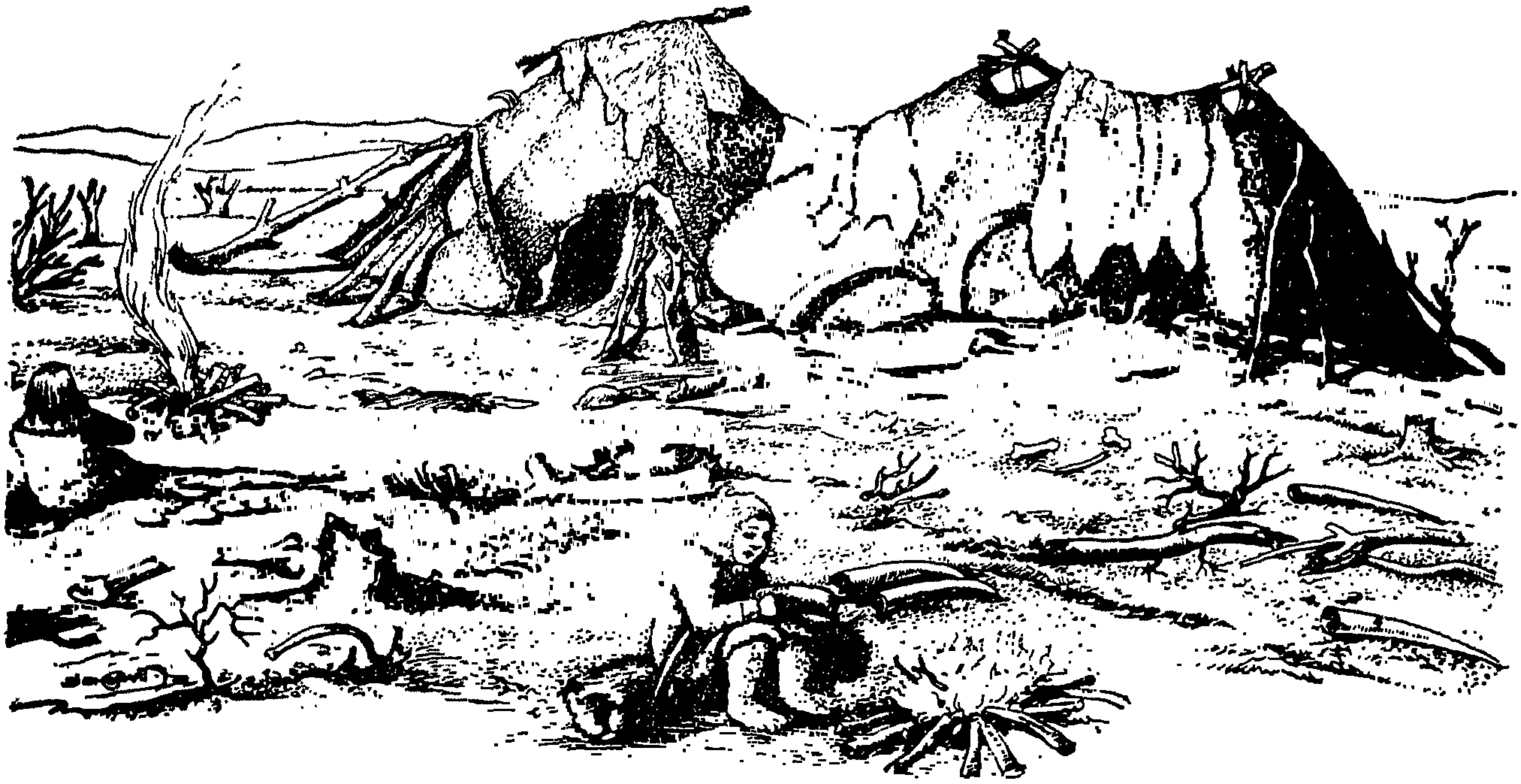

Fig. 3. Reconstruction of a mammoth hunter's dwelling based on finds at Pushkari, near Novogorod—Toad Seversky, South Russia. The dwelling was nearly 12.2 metres long and 3.7 metres wide, standing in a shallow pit.

Further eastwards, in the Amu-Darya basin, the site of Tesik-Tash has yielded not only a Mousterian industry with a blade element, but a child burial partly surrounded by a circle of five goat skulls: the child is of *Homo sapiens* type, though the skull is considered 'Neanderthaloid' in its features.

In the Russian Plain, an important site is Kostienki I. The evidence from this has been re-interpreted and it is now felt that the industry has not developed directly from the late Mousterian. From our point of view the presence of late glacial dwellings is important. Several oval house plans with hearths have been recognized here as well as at Mezine, Gagarino. These and other sites have yielded female figurines, thus evidencing the distribution, at the same time indicating that these figures were very probably cult objects.

In the Western Ukraine, along the Dniester river, the sites at Molodova have provided a series of industries from Mous-

terian through the late glacial and early post-glacial times. House plans indicated by mammoth bones and ivory also occur. 'Similar bone foundation, as also schematic carvings of women, have been found at Mezine.

Such Gravettoid occupation has also been found north of Moscow, and the northernmost Upper Palaeolithic site (known up to 1969) is at Byzovaia.

In Siberia, the site at Malta has yielded comparable material including semi-subterranean houses and elongated ivory female figurines.[1]

Of the later prehistory, the most spectacular is the discovery by astronomers and archaeologists that the megalithic monuments like the Stonehenge in England were probably observatories for recording movements of the Sun and the Moon by the Bronze Age inhabitants of Britain around 2,000 BC.[2]

However, of all the discoveries made in Europe including Russia, the most important would seem to be the very recent one, in France. Here, near the port of Nice, on the slopes of Mont Boron, not only has the evidence been obtained of a house plan in a cave made by man 130,000 years ago, but one of the finest interdisciplinary studies made jointly by soil scientists (sedimentologists), palaeontologists and palynologists, as well as geologists and archaeologists have enabled us to have a more detailed picture of man's life and environment than anywhere else.[3]

Mont Boron, on the Nice littoral, where the Lazaret cave is situated, was covered some 130,000 years ago with Norway Pine which today have disappeared from the Riviera. The sea level was lower. The ridges of the nearby Alpine mountain had the same contours. The waters of the Paillon river meandering on the plain were teeming with game and, where today the port of Nice is situated, man went to choose his flints. The climate then was colder and damper. Hence men came to find refuge in the cave. Here they not only built a hut as indicated by a line of

[1]The above account has been very briefly summarized from J.M. Coles and E.S. Higgs, *The Archaeology of Early Man*, London, 1969.

[2]*See* Gerald Hawkins, *Stonehenge Decoded* and the discussion in *Antiquity*, Vol. XLI, 1967, pp. 91-98.

[3]Summarized from a film version supplied by Service des Films de Recherche Scientifique.

stones marking the boundary of the inhabited area, but also protected the living area from the cold sea-winds by erecting a small wall of dry stones near the entrance. The hut was constructed with wooden stakes. These were kept in an upright position by stones arranged in a circular fashion. Other horizontal cross-bars attached the vertical stakes to the wall of the cave. The distribution of tools inside the hut also confirms the observation made above. In order to protect themselves from the cold, the inhabitants used fire too. For this they used oak or box tree and not resinous woods. The meat was cooked at a temperature varying between 600° and 300°C.

The animals in the Nice littoral at that time included a wolf, the great white snow owl. These are now extinct. It can now be said that the nomadic Acheulians came at regular intervals to find refuge in the cave and each time before leavingt heir winter camp they left on the ground, just at the entrance of their hut, the skull of a wolf, whose head had been trepanned.

Africa

Prehistory has contributed immensely to the unravelling of Africa's past. Almost unknown to the Greeks, only marginally exploited by the Egyptians and the Romans, and opened to trade by the Indians during historic times, it is the new disciplines of anthropology, sociology and archaeology that have given to the world an understanding of Africa's dim and continuing past. The new chronometric methods of dating tell us that man's distant ancestors, whose physical remains have been found at Olduvai Gorge, Tanzania, lived some 2.5 million years ago. This man not only made large stone tools, but also small ones, which archaeologists in their ignorance were accustomed to regard as late, because they were found separately in later deposits. This man, known as *Australopithecus Homo or habilis*, subsisted largely on animal diet. His stone tools were almost like pebbles and flakes.

Australopithecus had a small brain, with a large and massive jaw. They walked erect and used their hands for manipulating tools, and so did the forerunners of later hominids of the Middle Pleistocene. According to the present evidence there were two races of Australopithecines—a slenderly built and smaller form, *Australopithecus africanus*, and a robust form, *Australeopithecus robustus*. The former evolved into *Homo habilis*, meaning a man

having the ability to manipulate tools, and later into *Homo erectus*. According to potassium/argon dating, it would have taken about one million years to complete this transition.[1]

Three basic forms of worked stone predominate—polyhedral bashing stones, choppers, end-flake knives. These show a rudimentary knowledge of working stone for the production of flakes and chopping edges. These are not always made from pebbles, and therefore the term 'Pebble Culture' as synonymous with Oldowan is not correct, as angular lumps and flakes of lava and quartz were equally selected for making tools.

The Oldowan artefacts thus comprise the basic equipment for obtaining a varied and unselected supply of plant and animal foods which were carried to the home base. Two butchery sites of large animals show that the Oldowan man had learned how to deal with the meat from large animals. Small animals were also hunted. But in all this evidence is the definite indication of the *home base*, since it represents a place of repeated, though temporary, occupation. This is at present interpreted as necessitated by the fact that the young apes, like the chimpanzee and more particularly the man-apes, required to be looked after for at least eight to ten years. This 'first' home had a sharply defined area of stones with the usual stone and bone waste and Oldowan tools. The early sites are all close to water, as they should be. Thus Africa supplies us with data which indicate that a small-brained, man-like ape, walking on two legs, making tools, and using natural stone as tools, lived across the continent. Perhaps these consisted of small groups only, which besides being social,

[1]In October, 1972, *Newsweek* announced the discovery of fragments of an almost complete human skull and thigh bones in a dig near the east bank of Kenya's (Tanzania's) Lake Rudolf under a layer of volcanic ash dated to 2.6 million years ago. Though the skull is thus the oldest specismen found so far, it has no heavy supraorbital ridges. Hence it has been claimed by the discoverer Richard Leakey, the late Dr. Leakey's son, as the oldest human specimen. This is not the first time that such a startling discovery has been made in Africa. In fact, the continent has preserved the recorded history of man and his cultures for all these 2,000,000 years. This is indeed unique.

We are further told (Richard Leakey, *National Geographic*, June 1973, p. 820) that Dr. Glynn Isaao has unearthed 300 stone implements which can be dated to 2.6 million years ago. and credited to *Homo* Erectus or *Homo* habilis.

subsisted by collecting vegetable foods and organized hunting, the proceeds of which were shared with other members of the group. This had a far reaching effect as the use and working of tools as well as the exigencies of social life developed the brain, and this in turn helped man to make better and finer tools.

However, what is very striking about the next stage, associated with *Homo erectus*, where fossil remains are widespread—in southern Africa (Swartkrans), eastern Africa (Olduvai Gorge), central and western Europe, Indonesia and China—is that man lived in varied climatic and vegetational surroundings.

Homo erectus was a man with expanded brain (between 775 and 1225 cc) and large skull. His face had a much greater resemblance to ours than to that of the man-apes, though it was still massive. He had a postcranial skeleton with no significant differences from our own and he possessed a much more extended range of abilities and indulged in a greater variety of activities than, judging by the evidence, what had been the case with *Homo habilis*.

One of the most important of these activities is the method or skill with which the same kinds of large cutting tools such as hand-axes and cleavers were made now not only all over Africa but in Europe and Asia (excluding China but including particularly Japan and south-east Asia). This sameness might be due, it is now inferred, to some instruction and awareness. It is also believed, though there is not much proof, that these tools —cleavers particularly—were not used so much as meat mattocks and flensers for cutting the flesh from the carcases of large animals, as general-purpose tools connected with the collection and preparation of vegetable and animal foods.

This unspecialized hunting way of life lasted for a long time, at least for a million years, according to a few dates available from east Africa. During this long period, man's habitat, as well as the types and ranges of animals he hunted and the tools he used for various purposes, must have changed, but this change is not yet well documented archaeologically.

Between 10,000 and 12,050 to 70,000 years ago, Africa, as rest of the earth, experienced great climatic changes. There was increased glaciation in certain regions and lowering of sea levels, causing more rain and blowing of dry winds, so that the regions where there are deserts today became green with vegetation.

Evergreen forests expanded where there are savannas now, whereas in the west the lowland tropical forests retreated. Owing to the fall in sea beds, actual human migration as well as occupation of the continent became possible.

It is during this long period of 50,000 years and in variable environment that various sub-species of the Modern Man (*Homo sapiens*) appeared in different parts of Africa. Thus it was that the heart of Africa as well as the coastal areas came to be inhabited continuously by man for the first time.

Owing to the different ecological background, availability of the raw material, various needs and also perhaps due to the difference in sub-species, not only did the habitats become different but their most important relics, the stone tools, were of varied forms.

In east and south Africa, because the ecological conditions had not much changed, the Acheulian tradition continued with the necessary changes, and is now known as the Fauresmith culture. The handaxes and cleavers became smaller, and these were associated with scrapers on flakes from prepared cores. In south Sahara, where the vegetation was thick, we now find small scraping tools and certain heavy duty tools, described as 'Core-axes.' Superficially, these small crude tools might suggest a lowering of man's intelligence, which view, if accepted, will go against the evolution theory. It is, therefore, thought that these tools were meant for use by artisans and hence represented an advance in man's intelligence and ability, since they implied the deft handling of an extensive range of raw materials such as wood and by-products of wood which have not survived.

In the Congo and other regions, a beautiful lanceolate point of stone, worked bi-facially, emerged. This was not a carpenter's tool, but a thing in itself.

In Northern Africa, in Cyrenaica, a culture known as the 'Levallois-Mousterian' prevailed. Here the tools are essentially light and small and consist of a number of standardized scraper and point forms and flake knives. Of the many sites the Haua Fteah cave in Cyrenaica is the best known. About fourteen metres of stratified deposits have given a long developing cultural sequence. The Mousterian is here dated between 49,000 and 40,000 thousand years BP. Since this culture has no earlier antecedents in north Africa, it seems to have been brought by

the Neanderthal man, along with the bear, rhinoceros and deer.

These contemporary and regionally distinct industries known as the Sangoan, Mousterian and Fauresmith are also proved to be the work of *Homo sapiens neanderthalensis* or his south African cousin *Homo sapiens rhodesiensis*.

The earliest fossils belonging to the *Homo sapiens* have been found at Steinheim (Germany), Swanscombe (England), Fontechevade (France) and at a number of sites in Africa. In spite of great regional variability, they all exhibit fairly massive development of the supra-orbital area of the cranium to support powerful chewing mechanism and heavily built jaws, but the rest of the bony skeleton—the pelvis, limb bones, hand and foot—can scarcely be distinguished from modern man's.

In this fairly long period known as Middle Palaeolithic/Stone Age, and falling within the Upper Pleistocene, there is abundant evidence that man had occupied all kinds of country from the sea coasts to the high mountain plateaux and from the fringes to what is now waterless desert. This might reflect an overall increase in the density of human population. Stone artifacts were now definitely hafted of which the Aterian points supply the best examples. These would supplement wooden spears and, as proved by the occupation site of Kalambo Falls, were shaped by the aid of fire, proving thereby that about 60,000 years ago man was regularly using fire in Africa.

There is also evidence, though not from Africa proper, that man of this period had become aware of other aspects of life, besides hunting for food and mating. Intentional and careful burial of the dead in Europe and Asia with food and weapons not only shows a concern for the future of the dead persons, but also for the welfare of the group itself. There is also an example of ritual from the Monte Circeo cave in Italy, where a Neanderthal skull is set in the centre of a ring of stones. And ritual gave birth to art, as the caves of Africa, Asia and Europe show intentional collections of haematite, limonite and manganese—all used for drawing and painting on cave walls.

There are also fossil records which give evidence of conflict between man and man, as well as of tolerance and care for the disabled.

All these suggest that man was now in possession of speech and through it could communicate a knowledge he had acquired.

Speech, at this time, meant the ability to convey that game, fruits, water, raw materials, etc. existed in certain places, or that certain techniques were more suitable than others. It could also convey a conception of time or numbers. All this was soon to become useful for a life in which closer social ties, and greater economic independence would gradually develop. This sense of awareness—first about oneself, then about the group among which one lives and lastly about the entire community and the region—seems to be underlined by the different and varied ecological and cultural zones. The modern man (*Homo sapiens*) might claim a great share in this development.

As we approach the present time, the climate once again gradually changed. 15,000 to 10,000 years ago, the entire African continent experienced cooler temperatures, but aridity had begun to set in some regions south and north of the Sahara. Of course, there were periods of moist climate, as is well documented by the prehistoric art in the Sahara. However, aridity stimulated the more rapid spread of inventions and techniques.

These climatic changes also heralded ecological changes, and accordingly we notice all over Africa a still larger spread of regional and sub-regional cultures. What is, however, interesting and significant in all these cultures is the presence of microliths, indicating the use either of the direct percussion or of the punch techniques, the main aim being to obtain small blades or bladelets which could be hafted for turning out an arrow, a harpoon, a sickle or a saw. It is probable, though not well established, that it was the invention of the bow and the arrow, which led to the gradual spread of microliths all over Africa (and other parts of the world). These stone-tipped arrows, if smeared with poison, were most effective. They were fixed into the haft with some kind of vegetable mastic. The oldest known bow, dated to 8,000 BC, is found in northern Germany, while those depicted in the Sahara paintings and engravings are dated to 5000 BC. Actual fragment of a bowstaff is available from Zambia and dated to *c.* 2500 BC.

Various indigenous African races—the Mediterranean, the Negro and the Bushman-Hottentot—also seem to have emerged in this period, between forty and fifteen thousand years ago, though there is no unanimity about the origin of the Negro.

However, there is some evidence for the Bushman and Hottentots from the fossils in South Africa dated to 11000 years ago.

What is remarkable is that whereas the rest of Africa which had continually—though slowly—gone on developing for all these hundreds of thousands of years, stagnated for more than 5000 years, until the last century when European merchants and colonizers re-discovered it, the Nile Valley records a wonderful progress. This might have been due to the fact that with the deterioration of the climate, life become difficult in the desert and people flocked to the Nile Valley. Here the various stone-using people developed specialized lithic industries, though economically dependent on the hunting of the large savanna animals—the buffalo, hartebeest, gazelle or hippo—and also on the fishing in the sea as well as fresh water.

Then between 7000 and 5000 years ago, domestication of animals began, whereas wild cereals which were used previously came to be intentionally cultivated. Thus Egypt was on the road to civilization and soon became the leading civilized country. As early as 3200 BC it had developed pictographic writing, when the rest of the world was still illiterate. All this knowledge about Egypt's past was revealed by archaeology and was for long regarded as prehistoric because the written records were not deciphered.

Except the Nile Valley, the rest of Africa, including the Sahara, remained dark, unknown and undeveloped. And this is, indeed, intriguing that a whole continent which had responded so splendidly to the changing ecological conditions throughout the longest recorded past, should not somehow have been illumined by the torch of civilization.

The various African industries/cultures are more accurately dated by various radio-metric/isometric methods. These have been further checked against palaeo-magnatic time-scale. Briefly, intentionally flaked stone tools appear 2.0-2.6 million years ago. Since then there is little evolution until the *sudden* appearance of the Acheulian tool-kit between *c.* 1.5-1.4 million years ago at Olduvai Gorge and elsewhere in east Africa. Its evolved form is found in Cape Province of South Africa by *c.* 115,000 years ago.

It is now no longer held that there was a cultural stagnation and genetic isolation during the Upper Palaeolithic. The Middle

Stone Age' is now dated to 100,000 years ago, and placed in the early Upper Pleistocene. About 20,000 years this tradition was replaced by 'Late Stone Age' industries. J. Desmond Clark, "The 1974 Huxley Lecture."

South-west Asia

In South-West Asia, the areas or countries which have given important archaeological evidence for the development of Early Man through his industries and physical remains as well as faunal associations, are so far only three or four.

At 'Ubeidiyeh, Jordan Valley, Israel, have been found, from an ancient lake deposit, a succession of industries, beginning with pebbles worked into choppers and chopping tools, followed by a layer containing polyhedrons, spheroids and picks. The layer above contained a crude hand-axe industry (Abbevillian) and portions of a human skull and teeth which are provisionally classified as *Homo sp.*

At another site, Jisr Banat Yaqub, on a river terrace in the Jordan Valley, have been found a succession of Acheulian industries, with a deposit of Levallois flakes on the top. At other sites the Levalloisian industries are associated with the Mousterian. These are dated by C-14 to a period between 52,000 BP to *c.* 42,000 BP.

The famous Mt. Carmel caves as well as others (Adlun) found later have yielded a succession of stone industries, beginning with a flake industry (Tayacian), followed by Acheulian, Levalloiso-Mousterian and Advanced Palaeolithic blade industries. All these would cover a lakh of years or more, the Middle and Upper Palaeolithic belonging to about 50,000 and 30,000 BP. More important than the mere succession are the questions of the co-existence of two different physical types, viz. the Neanderthal Man and *Homo sapiens sapiens*, and the origin of the blade cultures of Europe. No final or definite answer is yet available to both the questions, because the evidence is not very clear. It is held by scholars that if these were contemporary, there might have been interbreeding between the two populations; or, as others believe, they may represent a simple variable population existing at that time and evolving towards *Homo sapiens*.

With regard to the origin of the blade industry, which appears with the pre-Aurignacian, it should be regarded either as an earlier phase or the origin of the ultimate development of the Advanced Palaeolithic industries, because the date of the Shanidar Cave has been fixed as *c.* 34,000 BP, which, judging by our present knowledge, makes it more ancient than those of western Europe.

The Shanidar cave in the Zagros mountains, northern Iraq, and adjacent to the Iranian border, has provided an insight into the climatic fluctuations, vegetation patterns, associated industries and above all the skeletal remains of seven Neanderthal men. The industries from the bottom upwards are the Mousterian (*c.* 50,000 BP) and the Baradostian (a crude blade industry; *c.* 35,000 BP to 28,500 BP).

After a long gap of 15,000 years, there is evidence of a Mesolithic (*c.* 12,000 BP) industry and also of a proto-Neolithic one which has an identical date. The study of pollen grains offers some very interesting information about the burial rites during the Mousterian period. It appears that at the time of such burials the body used to be either covered with or laid on a bed of flowers.

The story of man's further progress does not end here. At Zawi Chemi, near Shanidar, is said to occur the earliest known 'domesticated' animal, the sheep, and the evidence is dated to 10,870±300 years BP. The industrial equipment consists mainly of microliths—lunates and trapeze, which were employed in slotted reaping-knife blades and, along with baskets and querns, indicated the harvesting and use of cereals.

The development from this to regular farming and living in small villages is witnessed in a number of sites, such as Jarmo, Asiab, Tepe Guran and Ali Kosh on the Iraq-Iran border; Hassuna, Tell Halaf in Iraq; Jericho, Beidha, Ramad in the Levant; and Hacilar, Catal Hüyük and Beldibi in Turkey (or Anatolia). Of these, Jarmo was a small village having about 25 huts huddled together and is dated to *c.* 6,500 BC. Each house contained clay ovens and bases for silos, and the floors were covered with plaited mats. The villages depended mainly on mixed farming and on the cultivation of two-rowed barley, emmer wheat and peas.

More light on the evolution of farming has come from the provinces of Khuzistan and Luristan in south-eastern Iran. Here systematic collection of seeds—many of them being wild—is witnessed in the initial Bus Mordeh phase, whereas in the succeeding Alikosh phase there is definite evidence of cereal cultivation.

On the other hand, of the 'Fertile Crescent' in Jordan and Israel as well as in south Turkey,similar development is archaeologically documented. And then less than a thousand years thereafter, by 5000-6000 BC, a city-like civilization, though yet without writing, but with a large complex of houses and built-in walls —walls containing paintings of religious scenes and numerous human as well as animal figures—is exposed at Catal Hüyük on the Konya plain in southern Turkey.

Though pottery was made from the very beginning, wooden vessels and coiled baskets were also used. Tools were made from flint and obsidian, and beads from copper and lead. Large polished axes were fashioned from hard greenstone and mirrors from split obsidian blocks. Woollen textiles were used both for clothing as well as for furnishing (to judge from wall paintings). Antler and bone were turned into not only objects of daily use such as ladles, spoons and needles, but belt-fasteners and handles of various kinds as well.

Such a highly developed settlement, dated by C-14 to *c.* 6000 BC, had an equally well developed religion in which the generative forces of nature were symbolized by bulls, rams (or merely their heads) and women (mother goddesses) giving birth to bulls. In a stone carving we have probably the earliest representation of a human pair in embrace—on one side a goddess and her partner, and on the other a goddess and her son(?).

The way all these scenes are found represented in paintings or half-reliefs on the walls of the excavated house remains, level after level, and the profuse occurrence of associated objects of terracotta, stone, etc., leave little doubt that these are the earliest shrines. They are regarded as private, being meant for domestic purposes only. But one may wonder whether at such an early period or even later, a highly sophisticated complex of this kind could be conceived for an individual family, or a group of families, and that too built and rebuilt for centuries. Most probably this Catal Hüyük Shrine, where death was also symbolized

by leopards and birds like vultures, was the cult-house either of the entire settlement or of the elite (or the rulers or ruling community).

This rich Neolithic city lived on fourteen food plants such as emmer, einkorn, naked six-row barley, and pea; on bread wheat and two varieties of vetch and fruits such as almonds, acorns, pistachio, apple, juniper, and hackberry; and on hunting auroch, wild pig, Red deer, wild ass and sheep, Roa deer, Fallow deer, at times gazelle, fox, wolf and leopard.

The rest of the developmental story need not be given in detail. For there are numerous sites, each with some distinctive feature. What may be noted is the birth or introduction of the fashion of painting pottery, and its rapid spread by about 5,500 BC. In our present knowledge, it first appears at Hassuna, northern Iraq, Mersin (Cilicia) and soon reaches its apogee at Tell-Halaf.

While all these small and large settlements in the Levant, Antalolia, Syria, Iraq and Iran were well-developed villages or towns (as Jericho and Catal Hüyük have been called) on the environmentally favourable plateaus and hill slopes, city-civilization and urbanization could develop (as shown archaeologically) in the valleys of the great rivers. So far Al Ubaid, Tell Shahrain, Ur, Tepe Gawara and Arapachiye in the Tigris-Euphrates Valley have produced evidence of a greater political integration, which led to the construction of large public buildings in the form of temples; husbanding of resources—surplus food —in state granaries; planning of irrigation; some laid out cities; and lastly, literacy (in the shape of written tablets, mostly accounts, but occasionally other items as well).

Now it so happens that every small or big feature of urbanization that we witness in the Indus civilization has its beginning centuries, and at times millennia, earlier in south-west Asia, though we cannot derive, except very vaguely or generally, any feature of the Indus or the pre-Indus civilization from that of South-West Asia.

China

China had a long and rich pre and proto-historic past. Here archaeology has not only documented the various stages through which man marched towards civilization, but it has also

given us the best, which is also the earliest, evidence of the existence of man, his tools and fire. What is not yet clearly established is how this man and his tools are related to those of Punjab, Kashmir and Burma. One explanation is that "it represents an off-shoot from a main stream of cultural movement flowing from northern India and Pakistan through Burma and southwards."[1]

The earliest evidence of the presence of man comes from Choukoutien, near Peking. Here there are natural caves within limestone deposits. These have been grouped into various Localities. Of these Localities 13, 1, and 15 are important. At locality 13 was found a patinated chert chopping tool (which is regarded as the earliest in China),whereas at Locality (one) were found pebble and flake tools made on sandstone, quartz, chert and limestone, also flint and quartzite. These have been classified into choppers and chopping tools, while all these were made by free anvil method of flaking, the quartz pebbles (or nodules) show the use of bipolar technique. Numerous human skeletal as well as animal remains were also recovered. The man has been designated as *Homo erectus* (or *Sinanthropus pekinensis*), while among the animals are lion, tiger, elephant, horse, cattle, sheep and boar. Some of these must have been brought to the cave as game, and others killed by man.

In addition to all these was found undoubted use of fire, and this is one of the earliest records of man's control over his environment. There is another at Vertesszöllös in Hungary and later in France but none so far in Africa.

The occupation of Locality 15 seems to be later. Here no human remains occur, and the stone tools are better worked. These latter on show more definite forms and there is also evidence of core preparation prior to flake removal.

A similar early site has recently been reported from Ke-he in southern Shansi.

Later development as indicated by tools such as points, scrapers and knives is seen at Hou-Kela-feng in northern Shansi. These industries seem to be the work of the fossil man who emerged from *Homo erectus* and come from sites in the Huangho Valley of Inner Mongolia, the Yangtse Valley of Hupei and the

[1]Coles and Higgs, *The Archaeology of Early Man*, p. 395.

Sinkiang Valley of Kevan-tung. The skull from Ma-pa-hsaing is believed to be the earliest and of potential *Homo sapien* stock. Later and typologically more interesting industries were obtained from terraces along the banks of the Fenho river at Ting-t'sun. These tools were made on black hornfels, many bifacially well worked specimens, among which handaxe forms or proto-handaxes, picks and bolas are noteworthy. They seem to be in no way different from those occurring in Upper Pleistocene deposits at Nevasa and other sites in India.

While these heavy tools traditions continue, the blade element appears first in industries of the Ordos region at Shui-tung-Kou in Inner Mongolia. This may be Upper Palaeolithic in date and derived from Siberia during the final glacial period.

Of a still later date, but of a little intriguing character because of the identification of the human incisor with that of *Homo sapiens neanderthalensis*, is a scraper flake industry from the site of Sjara-ossogol situated on the southern border of the Ordos desert in Suiyuan, in inner Mongolia.

Then a high level cave at Choukoutien affords the remains of *Homo sapiens*—male and two adult females—killed violently. Along with tools of quartzite and chert occur perforated bone needle, beads of bone, teeth, shell and stone. The burial was deliberate and red ochre was used in the grave site.

Lastly, microlithic industries appear at Hsiao-nan-hai in Any ang. It is again a cave site. Similar evidence may also be available in the regions along the Shara Murum river in the Gobi desert.

Besides the *Homo sapiens* specimens found in the Upper Cave at Choukoutien, other skulls found at Tzu-yang Szechwan and three more sites are believed to be likely ancestors of the Mongoloid race.

The end of this hunting and food-gathering stage may be seen in the industry consisting of leaf-shaped points, scrapers, awls and large flakes recovered from the sand dunes at Shayuan in Shansi.[1]

[1]For a succinct and a little more elaborate account of the geological background, *see* Cheng Te-K'un, "The beginning of Chinese civilization," *Antiquity*, vol. XLVII, 1973, pp. 197-209.

Japan

Prehistoric research is still in its infancy in Japan. But though the work in this direction began very recently, an outline, however faint, of the activity of early man and his successors in this part of the world is already visible. This also implies that these islands had been penetrated from the mainland China, very probably in the early part of the Last Glacial age. What is further interesting from the point of view of worldwide contacts is the fact that the material recovered from a 25-30 metre coatsal terrace at Sozudai, Kyushu, consists of flake tools struck from prepared cores, and tools made on blocks or pebbles. There are also bifacially worked proto-ovates and proto-handaxes, choppers and chopping tools with unifactial or alternate retouch. Thus no more can we think of a stone age divided into two parts: (1) the chopper-chopping and (2) the handaxe. Both these forms of tools and techniques seem to have followed each other or, if introduced from outside, co-existed, specially later, when what is called the Levallois or Prepared Core technique came to be used. And then, as in the Handaxe World and even China, we have a widespread occurrence of long, broad, flake blades, usually unretouched, then true retouched blades, succeeded by an industry consisting of burins and small blade cores. The most important sites are Tarukishi, and Shirataki (the latter well stratified) in Hokkaido. And with the appearance of ground stone tools on a coastal site in northern Hokkaido,[1] the development sequence seems to be complete or run parallel to what is found in Europe and India.

Burma

In Burma prehistoric investigations began over 40 years ago. Here in the upper Irrawaddy river tools made on pebbles of silicified tuff and on pieces of fossil wood had been found, stratified in four terrace gravels. Probably because of the nature of the raw material (fossil wood flakes are well shaped only in one direction), the resultant tools do not conform to recognizable shapes. These, therefore, have been grouped stratigraphically into Early and Late periods and, typologically, into tools with the edge unifacially worked (choppers), those with the edge

[1]Summarized from Coles and Higgs, op. cit., pp. 407-10.

bifacially worked (chopping tools), flattened and elongated blocks with one or both ends worked (hand axes), and the rare proto-handaxes made on pebbles or flakes.

These terraces have been correlated with the Second and Third Himalayan glaciation, and were formed during pluvial and dry periods respectively. So far there is not much evidence of industries of flakes and blades.

Judging by the present evidence very briefly described above, it has been held for the last 30 years that Burma formed a link in the eastward or southward movement of the Soan pebble and flake industries. And there might have been a colonization with accessible land bridges during periods of low sea levels.[2]

Burmese-type pebble and flake tools, but made on quartzite, have been found in the gravels of the Kwae Noi River in Thailand. The pebble tools have been called Fingnoian. The industry cannot be dated.

Malaya

Further south, the pebble and flake industry from Malaya is called Tampanian, after the type site Kota Tampan. Though the industry consists of a variety of tool types on pebbles and flakes—points, picks, cleavers, scrapers and proto-handaxes, on quartz, quartzite and hornfels—it is all placed early in the Middle Pleistocene, because these have been found in the coarse waterworn gravels of the Kota Tampan river. And these gravels are believed to have been formed when the sea level was 230 ft higher than that of today.[2] It is also possible that when the sea level fell, the mainland of Thailand, Vietnam and Malaya was connected to islands of Sumatra, Borneo and Java. And this land-bridge—the Sunda Shelf—might have facilitated the movements of man and animals.

Indonesia

The pebble and flake industry of Java is called Patjitanian after the type site. The raw material is varied, as also the industry. Pebbles and lumps of silicified tuff, limestone, and fossil wood are flaked if required by percussion, or used by necessary

[1]Coles and Higgs, op. cit., p. 383.
[2]ibid, p. 388.

retouches and turned into choppers, chopping tools, adzes and proto-handaxes. Among all these, the presence of flake-blades is interesting, as also the fact that though there is a small number of true handaxes, Coles and Higgs think that these do not represent a true handaxe tradition.

Probably the mixed nature of the industry is due to the fact that the material is derived from the recent gravels of the Basoka River. Far more important than the stone tools is the occurrence of human and animal fossils. These have been assigned to two series. The upper series of Kabuh Beds contains *Stegodon*, *Elephas namadicus*, and remains of *Homo erectus* (Pithecanthropus I-III and recent finds), whereas the lower series has given fossil fauna and remains of Pithecanthropus IV and recent finds. On the strength of potassium-argon dates, it may be said that the *Homo erectus* was present in the area *c.* 500,000 years ago.

A comparative study of the Chinese and Javanese *Homo erectus* remains has given a picture of a person whose average cranical capacity was about 1000 cc. The skull itself had prominent brow ridges, which forms a shelf-like projection over the face. The forehead slopes away from these ridges and the back of the skull is not evenly rounded but rather pointed. The jaw is massive and projecting and the chin receding. The teeth are large and the canine is massive, but generally they are basically human. The limb bones of *Homo erectus* bear quite a close resemblance to those of the modern man, and, as in Australopithecines, they have been considered to be more 'modern' than the skull. The height of *Homo erectus* seems to have been about 5 feet.

Later evidence of the presence of man is also available in Java. A microlithic-like industry consisting of flakes, flake-blades, points and awls made on chalcedony, as well as artifacts made from bone and antler, have been found in the upper gravels of the Notopoero Beds at Sangiran, whereas at Ngandong occur, along with the Sangiran industries, the remains of a man known as *Homo sapiens soloensis*. This man possessed a skull with thick cranial wall, a visor-like supraorbital ridge, a receding flat forehead and strong occipital ridges; the average cranial capacity was 1250 cc.

Excavations in an enormously big cave, appropriately named

the Great Cave, at Niah in Sarawak, Java, have yielded stone tools, bone objects, animal remains at two principal levels and also a human skull from a depth of 100 inches. C-14 dates range from 19,570±190, 32,630±700 and 39,600±1000 BP.

Since this was written fresh discoveries in northern Thailand, are likely to revolutionize world prehistory. For here are found the earliest evidence for the domesticated plants and possibly animals; for grinding and polishing stone tools and manufacture of pottery. All these were as early as, if not earlier than, the western Asiatic cultures in the development of copper and then bronze metallurgy (casting), followed by iron casting. Likewise, a few data from elsewhere in south-west Asia, north Vietnam, Formosa, the Phillipines, Sarawak, Indonesia and Portuguese Timor have added significant chapters to the prehistory of this region. See *Expedition*, Vol. 14, No. 3, 1972, pp. 25-31.

Australia and New Zealand

Australia, New Zealand and Tasmania[1] were still regarded in a Stone Age until the Europeans colonized them a few centuries ago. Since there was no written literature before the 16th-17th century, prehistory in one sense ended only with the arrival of the colonizers.

And then for long it was felt that man must have come to these countries quite late! However, this illusion is being dispelled by systematic archaeological work during the last decade. The few explored sites are concentrated in the south-east part of the Australian continent, while three sites are in northern Australia.

The tool assemblages or industries have been generally grouped into (1) hafted (2) non-hafted. The latter is stratigraphically earlier. In the rock-shelter at Malangangerr on the coastal plain of Arnhem Land, excavation in a cave has yielded largely scrapers, utilized flakes, and edge ground-axes. Radiocarbon dates for this deposit range from 24,500 to 18,000 BP. The overlying deposit contains points, small rectangular scrapers and edge ground-axes, and the dates, towards the top, range from 5,980±140 BP to 370±80 BP. In the southern group is the well

[1]Summarized from J.M. Coles and E.S. Higgs, *The Archaeology of Early Man*, pp. 413-18.

known Kenniff Cave, situated in southern Queensland. Stratigraphically, climatically and industry-wise two main phases or periods are recognized. The earlier deposit before 12,000 BP includes only scrapers. The climate at that time was wet. Then aridity set in and lasted up to 7,000 BP when the cave was re-inhabited. The industry consists only of microliths and is dated to a period between 5,000 and 3,000 BP.

The human groups which made the non-hafted tools hunted such animals as the giant kangaroos *Palorchestes* and *Procoptodon*, and the flightless birds *Genyornis* and *Dryormornis*. The dingo, possibly a feral dog, seems to have been brought from outside at a much later date.

Since this was written very important discoveries about Early Man, his tools, his diet and the way he disposed of the dead have been reported from Australia. The site is Lake Mungo in western New South Wales, and dated by C-14 method between 25,000 and 32,000 years ago. It is the oldest archaeological site so far discovered in Australia.

The human remains at Mungo are of considerable interest. The cranium displayed some of the palaeo-Australian features seen in the Talagi and other crania. The diet of Early Man was similar to that found in the ethnographic record. The stone tools consisted of heavy and light scrapers which persisted on the mainland until some 6,000 years ago. Cremation was practised in south-eastern Australia and Tasmania in ethnographic times and Mungo remains confirm the belief that cremation has Pleistocene antiquity in Australia. Thus a distinctively new culture was established in the region between 25-32,000 years ago.[1]

In Tasmania, so far only tools of the earlier phase have been found, in the coastal cave of Rocky Cape. The first inhabitants who probably came about 8000 BP in late glacial times, when the island was connected to the mainland by a long bridge, used crudely retouched flakes, made from locally available rocks and bone points. They subsisted on shell fish, seals and parrot fish together with a variety of vegetable foods.

In the later phase bone points are absent, and the stone tools include circular scrapers, high domed scrapers and concave

[1]Bowler, *et al*, *World Archaeology*, Vol. II, 1970, pp. 57-58.

retouched pieces from excellent raw material carried over a long distance.

America

Though it is conceded that Early Man lived in or entered America in comparatively late times, the probable date of his arrival is still in doubt. He could have entered America only from Siberia-Alaska through the Bering Straits. This crossing could have been possible when the sea level was quite low and a land bridge existed. According to the present knowledge, such a possibility existed between 26,000 and 20,000 BP or between 12,000 and 11,000 BP.

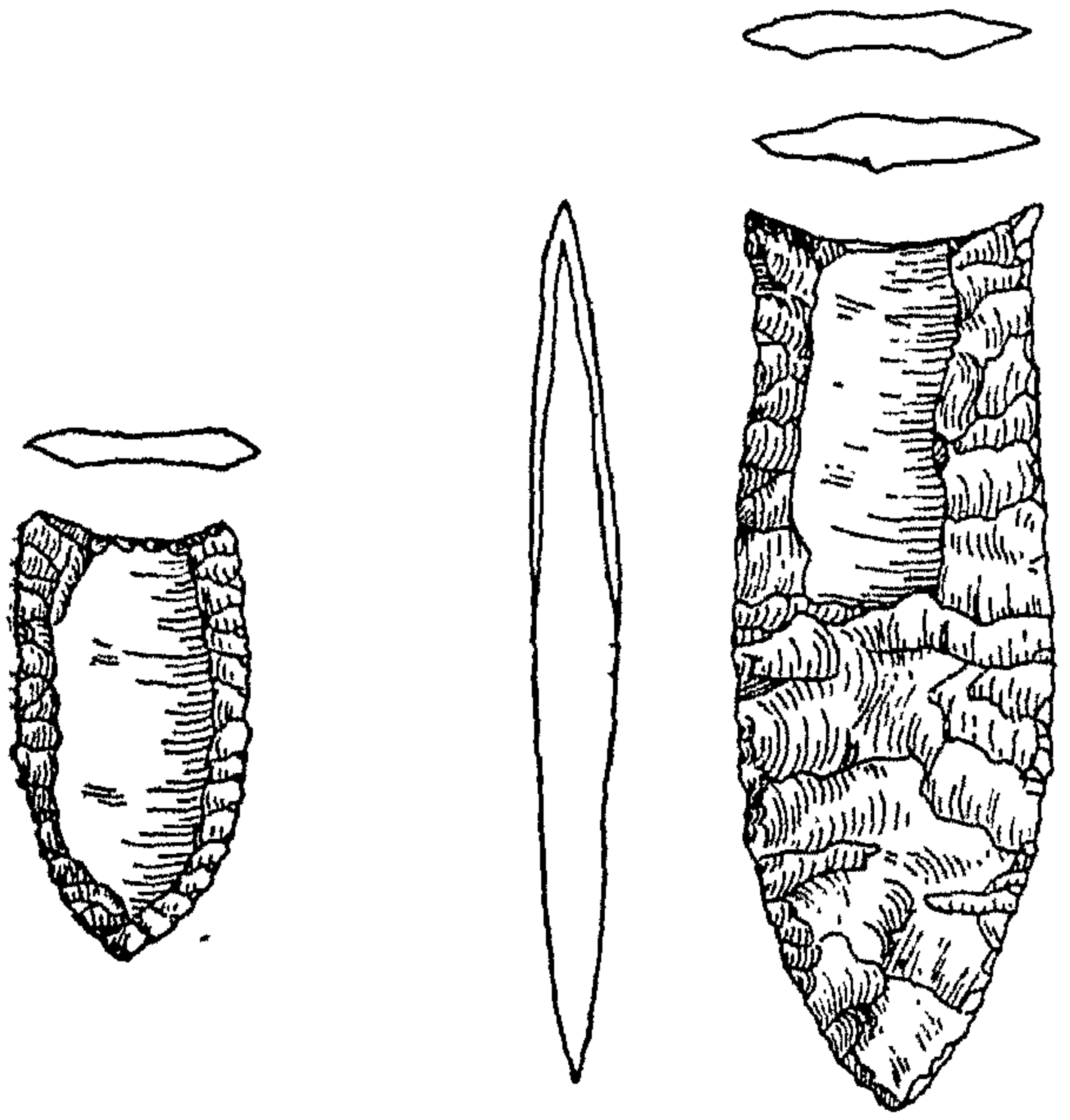

Fig. 4. (a) *Clovis fluted point,* (b) *Folsom fluted point.* Redrawn from Chester S. Chard, *Man in Prehistory,* New York, 1969, Fig. 12-10.

The evidence of man's existence is so far supplied by stone tools only. These are found in north and central America and north-western south America. The earliest of these are Clovis points and the Sandia points. The Clovis industries are dated as early as 11,000 BP by radiocarbon. These industries are followed by later ones, among which Folsom point is well known.

From an ethno-archaeological point of view, it is worth pointing out that the regions where the earliest tools are found in

Amercia are also those where the Red Indian—the aboriginals —of America lived. So there is the Palaeo-Indian tradition. The earliest tools, Clovis points, occur in the Llano Complex in the Staked Plains of Texas and New Mexico. Alongwith Clovis points (which are believed to have been made by percussion rather than pressure as at first sight they look to be) occur also a number of unfluted points—hammer stones, scrapers, and some bone tools. The Sandia projectile point is named after the Sandia Cave in New Mexico. Here they underlie Folsom points. The latter are believed to be a development from the Clovis and occur mostly in the east of the rocky mountains. These points are smaller than the Clovis, and are associated with a change from mammoth to bison hunting.

On the whole, American prehistory does not go very far back in the past.

2 CHAPTER

PREHISTORY IN INDIA

THE BACKGROUND we have sketched for a picture of India's pre-history is no doubt unevenly painted. There are some large dark shadows, and some areas—for instance, western Europe and Africa—are very well illuminated. This is not intentional but due to lack of knowledge.

Except for the Himalayas (excluding the foothills) and the Vale of Kashmir, the climate in the rest of India is semi-arid. That is, there is a period of three or four months of monsoon, followed by a long spell of heat, and dry periods with a couple of months of varying degrees of cold. In south India, for example, there is no cold season at all. Hence the glacial and periglacial areas (Kashmir and Himalayan foothills forming the Potwar plateau in west Pakistan, east Punjab and Himachal Pradesh) and the Peninsular India have to be treated separately.

Glacial and Peri-glacial areas

Both the glacial and peri-glacial areas in India are in many ways comparable to those of Europe. Both had experienced during the past one million years, four glacial and three interglacial periods. These climatic phases have left their marks in Kashmir, for instance, and in the Potwar plateau. Secondly, there is evidence of mountain uplift in the past and even now this activity has not stopped, so that the Himalayas are still unstable and, consequently, form a part of the earthquake belt stretching from the Phillipines to Turkey and Greece.

Until recently it was thought that early man had not lived in

the Kashmir Valley during any of the periods of Ice Ages. Evidence is now available that man had lived on the banks of the Liddar at Pahlgam at a height of about 7000 ft. either during the first interglacial period or during the second glacial. This was the time when his existence is indicated at five sites in the Punjab foothills. The climate then was congenial for man's habitation. Trees such as cinnamon, pine and oak grew in the Kashmir valley as well as in the foothills. In these forests roamed elephants, tigers and other animals.

The tools which indicate man's presence in this environment are huge massive flakes. These are made of blackish Panjal trap, a rock which forms the core of the Pir Panjal mountains. The flakes are found embedded in a conglomerate consisting of huge boulders, pebbles, etc. These flakes would be the earliest tools of man found in India and Asia, if the writer's argument is accepted that they belong to the first interglacial in the Himalayas and might be dated to about 500,000 years ago.

After this period, the Himalayas began to rise. This feature is particularly noticeable on its south-western face, which forms the Pir Panjal range. In Kashmir a huge lake was formed, whereas in the foothills a number of rivers began to flow. These were the ancestors of the present rivers such as the Soan or Sohan (ancient Shobhana), the Haro, and the Indus. These rivers flowed at about 122 meters higher than their present beds. Owing to several reasons the rivers have cut down the height of these old beds, which remain high and dry, and form (or are known as) terraces.

In these terraces are found stone tools made by man. Unlike the first tools which are massive flakes, these are mostly made on round or oval, flattish pebbles or pebble halves. Once again the Pir Panjal trap rock is preferred, which is hard and has a homogeneous structure. Comparatively few pebbles or pebble halves have pointed edges. On the countrary, a large majority of the edges are found to be broad and straight, or slightly convex but rarely concave. These broad edges have been achieved by flaking on one or both surfaces of the pebbles, usually from the broken end. Thus it is possible to make a distinction between tools which are made on one surface and those made on both the surfaces.

For easy recognition, the unifacial tools are called choppers,

and those on two surfaces, chopping tools, though it will be realized that both would perform the same function, viz. chopping, that is cutting a tree or a piece of flesh from an animal-body, probably at one stroke, or with minimum of strokes, but with great force. Smaller pebbles or pebble-like pieces with such broad edges could also be used for scraping skins or barks of trees, while the rare pointed tools would be used for digging a hole in the ground or grubbing roots and stumps from the earth.

These are some of the likely uses of the choppers, chopping tools and scrapers, and a few pointed tools. It is doubtful, however, whether any of these tools would be useful in hand to hand fight between man and man or between man and animal. Hence some scholars made an interesting suggestion that these earliest Punjabis were non-violent people, as they had no weapons of offense!

Unfortunately, this interesting observation cannot be checked because we have so far had no remains of trees and animals, let alone human skeletons, of this period from deposits of the period anywhere in the Punjab, Himachal Pradesh or Kashmir. Only some idea can be had of the climate. The Kashmir Valley, and such high altitutdes in the Himalayas, had experienced what is called the Ice Age. Not only snow had covered the entire Kashmir Valley, but glaciers—rivers of ice—had come down very low. These rivers had brought with them big boulders, of all shapes and sizes. These boulders, if carefully examined, bear striation marks caused on the surface of the rock, when forcibly dragged along its surface. While the higher altitudes were under an ice cap, rivers at the lower altitudes were experiencing heavy rains. This alternation of intense cold and heavy rain seems to have been a regular feature of the Himalayan and sub-Himalayan regions. The records of these climatic changes are preserved in the physiography of the Punjab foothills.

It was formerly thought that there were two separate groups of the First Punjab Man. One group made and used only pebble tools described above, while the other who lived also at the same time made pointed tools by flaking a large portion all over the oval pebble. Such tools are conventionally called handaxes.

The separate existence of these two tool-makers was postulated because of the evidence found at different places in the Potwar Plateau. The handaxes had been found at Adiala,

Khusalgarh, Injra, and Chaomukh.

However, since these discoveries in 1934, a hadaxe has been found at Pahlgam, exactly at the place where the massive flake was found, but above the horizon of the flake, in a layer of brownish clay. Other handaxes and cleavers have also been found in the Kangra valley, though their exact period is not known.

This is very important, particularly the discovery of the handaxe at Pahlgam, because it helps to remove the impression that there were two different kinds of men, having different cultures, known after the river Soan or Sohan or after the tool type as Chopper-Chopping Culture and the Madrasian or the Handaxe Culture.

Whatever doubt that may be there in this view is removed by the fact that handaxes and cleavers occur in plenty at several sites in deposits which can be dated to or placed in the second interglacial.

Before this change or establishment of an old industrial tradition (or habit, as a famous American archaeologist would like to say), another important development, as revealed by stone tools alone, should be mentioned here.

This development is the occurrence of large number of tools made on flakes, and smaller pebbles or pebble halves. Again the way or method by which these flakes have been removed from the parent core or nucleus deserves our attention. Instead of hitting the pebble on a stationary larger stone (called anvil), or hitting the pebble kept in one hand with another pebble, man must have now planned or given some thought to the removal of a particular type (size and thickness) of the flake. This becomes evident when one looks at the core from which the flake is removed and examines the flake itself. The former (core) shows a shallow depression, its border marked by still smaller and flattish flake scars. When we examine the flake, it is found to be always symmetrical in outline, comparatively thin, oval or triangular, and often bearing smaller flattish chip-marks on the butt (the place where the stroke was given).

The Levallois technique of removing a desired size of flake is called 'Prepared Core and Flake Technique.' Since this technique was seen in flakes first found at Levallois near Paris, it is also called Levalloisian technique. It is no less significant that this improved, but in a sense wasteful method of obtaining

flakes always occurs, not only in France, but all over Europe, western Asia, Africa and India, after the period of the pebble tools and handaxes and cleavers, particularly after the period when the handaxes became lighter and more symmetrical as they were made on flakes and not on cores. It is thus logical to say that man living in most parts of the Old World (including India) had mentally developed, since this symmetrical form is a direct result of pre-planning. And perhaps this is the first documented planning in human affairs. How did man take this step? Did it occur to him to have a prepared flake first in France and from there did the idea gradually travel eastwards and westwards or did man, all over the Old World or in some places, independently take this step? When we raise this question, we are immediately faced with the old problems of diffusion and independent invention. No final reply can be given, but when the sites yielding such Levallois or prepared flakes and cores are plotted on a map, with the available C-14 dates or otherwise definitely dated geological deposits, then a gradual eastward migration of the technique becomes evident.

It is also customary, at times, to say that man, at some period or site, made some tools fashioned from pebbles or cores and others on flakes. Thus some scholars postulate the existence of two separate traditions (or cultures), viz. (*i*). Core-biface (Handaxe) tradition, and (*ii*). Flake tradition or culture. This view is not wholly wrong, because at some sites are found only flakes, at others only core tools. But at a large majority of sites, as first observed by Commont in France, both occur together, though in the infancy of this subject, tool collectors were inclined to gather only handaxes, and later only Levallois flakes, thus giving rise to the totally false picture of man's way of life.

It is, indeed, unfortunate that nowhere in the undivided Punjab we have any idea of the vegetation and the animals contemporary with this mentally advanced man. At most, we may outline the natural scene by saying that the river banks were now marked by older beds of gravel and silt (called terraces), thus indicating a renewed cycle of deposition and erosion due to climatic causes. But the more important climatic change in the Punjab foothills that can be dated and should be noted is the formation of sandhills. These were formed when the climate in the Punjab began to be as it is today, that is, three or four

months of rain and eight months of a dry season, the last four of which, from February onwards until the arrival of the monsoon, are marked by an intense wind activity. These cause severe dust storms, and the air, up to very high altitude, is surcharged with dust. This activity first took place in the Third Interglacial period. The man who made fine handaxes at Chauntra and other sites in the Punjab was the first witness to this wind activity. The wind lifted up the fine silty sand deposited by rivers and glaciers. And thus the Punjab plains began to be formed by a two-fold activity: (*i*) the rivers depositing their silt, and (*ii*) the wind raising up fine silty sand left by retreating glaciers. This fine wind-borne sand is called 'loess.' Such loess formations were first observed in peri-glacial regions of the Alps, and later in China. In fact, they occur wherever the land has been under the mantle of snow (ice) and later experienced drier conditions.

These loessic deposits also contain the remains of extinct species of camel and other animals, as well as tools of stone which are smaller, thinner, and more blade-like.[1] Thus in every way, we have indications of time nearer the recent (geologically).

So far these blade-like tools have been found only in western Punjab, at two sites called Pindigheb and Dhok Pathan. But after a systematic search they are bound to be available also at several other sites, and also in eastern Punjab, Himachal Pradesh and the foothills of Jammu.

These blade tools show once again how man was gradually refining his hunting methods as well as those of carrying the daily tasks of cutting, scraping, chopping roots, vegetables and animal remains.

Peninsular India

Peninsular India conventionally consists of the old land mass, formed by the oldest as well as comparatively younger rocks, such as the trap or basalt in western India, from Indore in the north to Dharwar in the south. Thus the whole Himalayan range

[1]Though these tools were placed in the Final or Upper Pleistocene by De Terra and Drummond, these authors in their revised study compare them with the Mousterian of Europe.

and Indo-Gangetic plains are excluded from it. However, while discussing the history of man in India, Sind and Baluchistan in the west and north-west and Assam in the east and north-east will have to be taken into account also.

This vast country stretching from the Chhota Nagpur plateau in the north to Kanyakumari in the south, and from Dwarka in the west to Bhuvaneshwar in the east, is a land of considerable contrast in land-formation, flora and fauna.

Thus much of eastern India, excluding the recent coastal strip, is a gently sloping plateau, its surface marked by a reddish soil. As opposed to this, the west presents a high, almost perpendicular wall, no doubt pierced at many places by openings called *ghats*. This wall continues like this, and only peters out near Palghat, where it joins the Eastern table-land.

The western Ghats receive much more rain than the east, and naturally there are thick forests even today at an altitude of 1,525 metres. In eastern India, the Chhota Nagpur plateau also contains older forests, in which the *sala* dominates the scene. In between these contrasts, forests exist in parts of the Madhya Pradesh, Andhra and Gujarat but elsewhere they have thinned out and almost disappeared.]

In these forests of Chhota Nagpur, Madhya Pradesh, east Rajasthan, Gujarat, Maharashtra, Karnataka, Andhra and Tamil Nadu live many of our primitive tribes. Economically, some of them are in a Stone Age and lead a wild, nomadic life. They do not produce their food, but gather or collect vegetable and animal food. However, few of them use stone-tools today.

In this old land of many contrasts—scenic, climatic and ethnic—stone-tools of the type described earlier in this book have been and are being found almost everywhere, along the banks of smaller and bigger rivers, and at times in the midst of thin forests and on open plateaus. Very often, these tools are found loose, at times in stratified deposits or in association with remains of animals which do not exist today. The richest collection of such animals and tools has been made in the Narmada Valley, particularly between Hoshangabad and Narsinghpur. Small, stray finds have been made in the Godavari, Pravara and other rivers of Maharashtra. Recently, the Belan, comparatively a small stream south of Allahabad, has yielded a good number of fossils as well as tools. When all these finds of tools and

animals are plotted on a map, a very interesting picture (albeit faint) of Early Man and his environment presents itself before our eyes.

It can now be confidently said that thousands of years ago the rivers all over Peninsular India flowed in much wider beds. The climate at that time was not quite different from that prevailing today, but in many regions, such as Andhra, Karnataka, Maharashtra, Gujarat, Madhya Pradesh, east Rajasthan, west Bengal, Orissa and south U.P., the summer rains were heavy and probably fell more regularly—with the result that the rivers carried or could bring down a thick load of coarse material in the form of pebbles and boulders.

As the force of the water became less these got deposited in the river bed. This is particularly visible in the upper reaches of many a river. Later, for some reasons as yet not fully understood, these pebble/boulder beds got covered by thick deposits of sandy silt.

This rise of river beds is called aggradation. An aggradation of a river may take place due to several reasons, the most simple being that a river, in its onward flow, meets an obstacle which may take the shape of a landslide or a rock barrier. In the lower reaches of the river, the rise in sea levels—even temporarily—causes the river to rise and overflow its banks. While thus overflowing, the river carries with it masses of fine sand and spreads them all over its bank.

One has to study all these possible reasons for aggradation of a river—rise in sea level, or cropping up of a rock barrier or landslide or heavy rain—for understanding what had happened to the land in which man lived.

A landslide or rock barrier might be interpreted as caused by an earthquake or such natural event of great consequence. It has been observed that such aggradations have taken place all over India, not only in the lower reaches of small and big rivers, but far away in the interior, in the upper reaches of the rivers as well. In this connection examples of the Narmada at Pankhrisodha, the Mutha at Dattawadi and the Belan in the district of Allahabad can be cited.

The story of river-aggradation does not end here. It has been repeated at least twice, and each time the rivers have not deposited identical loads in the form of pebbles and boulders.

However, it has also been uniformly observed that the subsequent deposits over the older beds are finer in texture and different in colour. These differences are no doubt meaningful, but their exact significance is not understood by us. One simple explanation is that the rivers rose again owing to heavy rain, but at this time they carried not very coarse but comparatively finer material and spread it *over* or *against* the older banks. All the rivers in India have undergone at least two cycles of such aggradation and erosion.

Very often, while forming and re-forming their beds, the rivers leave out the older beds, which stand out as terraces. Generally, but not universally, the highest terrace is the oldest, and the lowest one the youngest.

Now all these would have been of no significance to us who wish to know man's dim past, were it not for the fact that very often, man's only handiwork—the stone-tools—are found embedded or associated with these terraces or younger and older deposits. And these tools happen to be different in material, colour and texture, as well as in form or type and technique. Thus we at once get a relative time-table or chronology of tools, which in the absence of definite dates becomes our main basis or evidence for dating stone-tools and the associated remains of plants and animals. As these have changed from bed to bed, not at one place, or in one region, but in large parts of a geographic region, they have become what are called type fossils.

Not only the tools, fossil-flora and-fauna, but even the colour of the silt and sand in which these are found becomes significant. It has been found by me that the older silt and sand-bed are usually dark red or brown, hard and full of 'kankar' or lime concretions. The one above it or still higher up is brown and with a less amount of 'kankar,' and the one near the top is light brown or yellow, and without any 'kankar.' Nature thus speaks with a prehistorian. And the more a prehistorian tries to understand Nature's language, the better is he able to comprehend man's bygone past, particularly his environment.

It is in the lowest or lower beds in an exposed river section that we have found handaxes, cleavers and tools made of pebbles or pebble halves, whereas the gravel beds resting above the old, weathered, dark brown 'kankary' silt have yielded tools which

are made on a different kind of rock, are as a rule smaller, and exhibit forms such as points, awls or borers, and a large variety of scrapers. The latter have usually a flat (sometimes natural) surface as such a surface is achieved by breaking or flaking the pebble and obtaining a thick or thin but flat-bottomed flake.

Though spread over hundreds of thousands of years the tools/weapons do exhibit a change. And when this change can be related to a change in material, colour and composition—of a layer in a river section, or a layer in the occupation deposit of a cave or rock-shelters—then a relative chronology results.

Luckily, in some river sections or river terraces, stone tools like our knife-blades are found, instead of tools made on thick flakes or flat nodules. Even a non-specialist layman, who sees both these or at times all the three groups of stone tools so far mentioned here, will be able to distinguish them and group them separately, as an archaeologist would do. If this layman thinks a little, when he comes across a stone-blade, he would at once remember that it resembles or is identical with our steel or iron knife-blade in general shape and even in technique. Particularly, both the blades are long and thin, with an edge on one long side, whereas the other long side is intentionally thick and blunted so that it would not injure the finger of the user. The revelation, therefore, comes to him easily that the basic form of present steel blade was invented by man in the Stone Age.

The Stone Age

WHEN WAS THIS Stone Age, and how long was its duration? Did man stay only on the river bank as would normally be inferred because his tools are found in river deposits, or did he live elsewhere, away from the river?

In peninsular India, usually, tools are first found on river banks and therefore it is legitimate to say that man during the Stone Age lived on river banks. But gradually, as scholars began to explore the jungles and hilly areas in Madhya Pradesh and Uttar Pradesh, or the sandy plains of northern Gujarat, it was found that man lived in caves, or rock-shelters and in sandy plains which enclosed a pond. Easy availability of water and game, and very often the raw material, was a prime consideration in the selection of habitation sites. These were obviously temporary camping sites, and not permanent settlements. Hence

so far they have not yielded such data as hearths, charcoal, ash, bones of animals left after eating and the physical remains of man himself. So far only two sites—one Adamgarh near Hoshangabad and the other, Bhim Betka caves in the sandstone formation at Obedallagunj near Bhopal—have given evidence of the occupation of caves and rockshelters right from the Early Stone Age. And it is heartening to find that the stone-tools found in excavations at both the sites confirm not only the change in tool types but also the material used. What is new and important is the fact that the evidence about tools made and left by man is found from undisturbed deposits. From that we can be sure not only about man's presence, however brief, as an inhabitant there, but by a careful collection of the chips, flakes and unfinished as well as finished tools we can also have an insight into the technique employed in manufacturing stone-tools. Fuller and more complete exposure of the rock-shelters or caves might also give an idea about man's method of living.

This much is now certain that neither the Early Man nor his successor lived only along the banks of small and large rivers, always in the open. Camps—probably temporary—were made wherever raw material was easily available, as for instance the Ranka Nala, Ranala Khurd (District Dhulia), Jain temple site and Bichi Nala at Lalitpur, in the Valley at Gupteshwar near Gwalior, and Chirki Nala near Nevasa; Nagari near Chittor, on the other hand, was right on the river.

Such camping sites, away from the river banks might have become more common, during the Middle Palaeolithic period and later. For now the tools required were much smaller, so that they could be produced wherever wanted or even carried by man from place to place. Anyhow, a little more mobility and penetration of areas in the interior may be inferred from the occurrence of tools in the forests of Madhya Pradesh, between Jabalpur and Dindori, and in the Dang forests in Gujarat, as well as thick forests in the Garo Hills (Meghalaya).

The same inference would be true about blade-tools, for these also occur in the rock-shelters and caves, but so far only two sites are well studied. These are the Bhimbetka caves near Bhopal, and the caves near Betamcherla in Kurnool District.

What is interesting and important is that right from the beginning of his appearance in India, man has been frequenting

river banks as well as caves and rock-shelters in thinly forested regions of India. Of man's other aspects of life we have to infer them only from the nature of his tool types, for nowhere, except in the Betamcherla caves, anything else than stone-tools have so far been found.

To have an idea of other aspects of man's life is rather a difficult task, for the simple reason that the objects we are trying to interpret are far removed from our times. Secondly, such objects—whether tools or weapons—are not used by any primitive or preliterate tribes either in India or anywhere else. Thus we can derive no clue or guidance from the usages current today.

Tools and the lifeways of Early Man

Nevertheless, the forms of tools, when examined even by a layman, are suggestive. These not only indicate their use or function, but, when similar forms are placed side by side, also show how man's skill in manufacturing these tools was developing. If, as in some parts of Africa like the Olduvai Gorge in Tanzania, or sites in France, these tools are found in layers which can be arranged one above the other, then a gradual chronological development in man's skill and needs can be reasonably postulated. Further, the presence of a completely new form in a certain chronologically arranged group, immediately sets the student or the observer thinking. For such changes presage the arrival or presence of different people with different needs, skill or just fashion, or adaptation by man to changing environment.

Such a study is called typology. For well-nigh a hundred years, it has been the prime pleasure or concern of the archaeologists. And though very much decried now by a younger generation of prehistorians, it is still not only an intelligent exercise, but gives an useful insight into the changing needs, adaptability and developing skill of Early Man. The earliest tool/weapon was or would be a small or big pebble. Such a pebble cannot be called a tool, because it is just a natural object, in no way fashioned by man. However, the way man or an animal—like a monkey, or chimpanzee, for instance—used the pebble, indicates its use. If a round, flat pebble is taken and struck against another object at close quarters, it would be called a 'hammer.' But if such a pebble is thrown against a bird, animal

or man, it will be called a weapon of offense—or a missile or a bola stone, as they identify it in Africa or Australia.

None of these inferences is however possible unless we see the person (man) striking or hitting with a pebble. Hence, to infer the use, the pebble must be intentionally broken by man, with a view to getting a point or edge.

This exactly has been noticed in the earliest pebbles and nodules found at three sites in Africa, Europe and China. But it has been also noticed that these pebbles which were slightly worked, were not necessarily large, as it was once believed. For instance, at Vertesszollos in Hungary, Olduvai Gorge in Tanzania and Choukoutien near Peking, these worked pebbles are comparatively small.

At times instead of complete pebbles, large or small flakes have been utilized or slightly reworked. This has been the case in Kashmir and the Punjab, but it does not necessarily imply that in these places man only used flakes. For it is but common sense that for breaking a nut or a bone, a fairly large and heavy pebble or pebble-half would be more useful than a small pebble or a flake.

A flake, which is a thick or thin chip removed from a pebble, would be more useful for cutting or scraping an animal than breaking a bone or a nut. Of course, a large and a thicker flake would be required if a chunk of flesh has to be removed from an animal's body. It would be easier to handle such a flake, if it is thicker on one side, and thinner on the opposite.

Now, it so happens that the earliest deposits or layers in sites like Olduvai Gorge, Pahlgam (Kashmir) and Choukoutien have yielded such an assemblage. They can be grouped into: (*1*) tools for heavy work (heavy duty tools), and (*2*) tools for light work (light duty tools). Thus according to their likely usage or function, both the heavy duty and light duty tools can be classified into: (*1*) tools for breaking, (*2*) tools for chopping, (*3*) tools for cutting, (*4*) tools for scraping, (*5*) tools forboring a hole and (*6*) tools for uprooting. However, we must not forget that Early Man was so careful as to use only a particular type of tool for any of the specified functions listed above. There are occasions when some types of tools are used for more than one purpose. These are multipurpose tools, under which category fall the choppers and scrapers. This infant stage of man's technological

development might be described as 'The Era of Unspecialized Tools.' For the tools, though divisible into four or five categories, according to their shape, size and weight, had not, in fact, any truly distinct form or function. This is particularly true of the tools of the next stage found in stratified deposit at Olduvai Gorge and numerous other sites in the Old World including Europe, western Asia and India. Pebbles—especially those which were oval, flattish and whose one end was thicker than the other—were deliberately broken or flaked (with the help of another pebble or striking it against a stationary boulder) in such a way that a sharp but irregular edge was gradually formed on a part—quarter, half, or three-fourths—of the pebble.

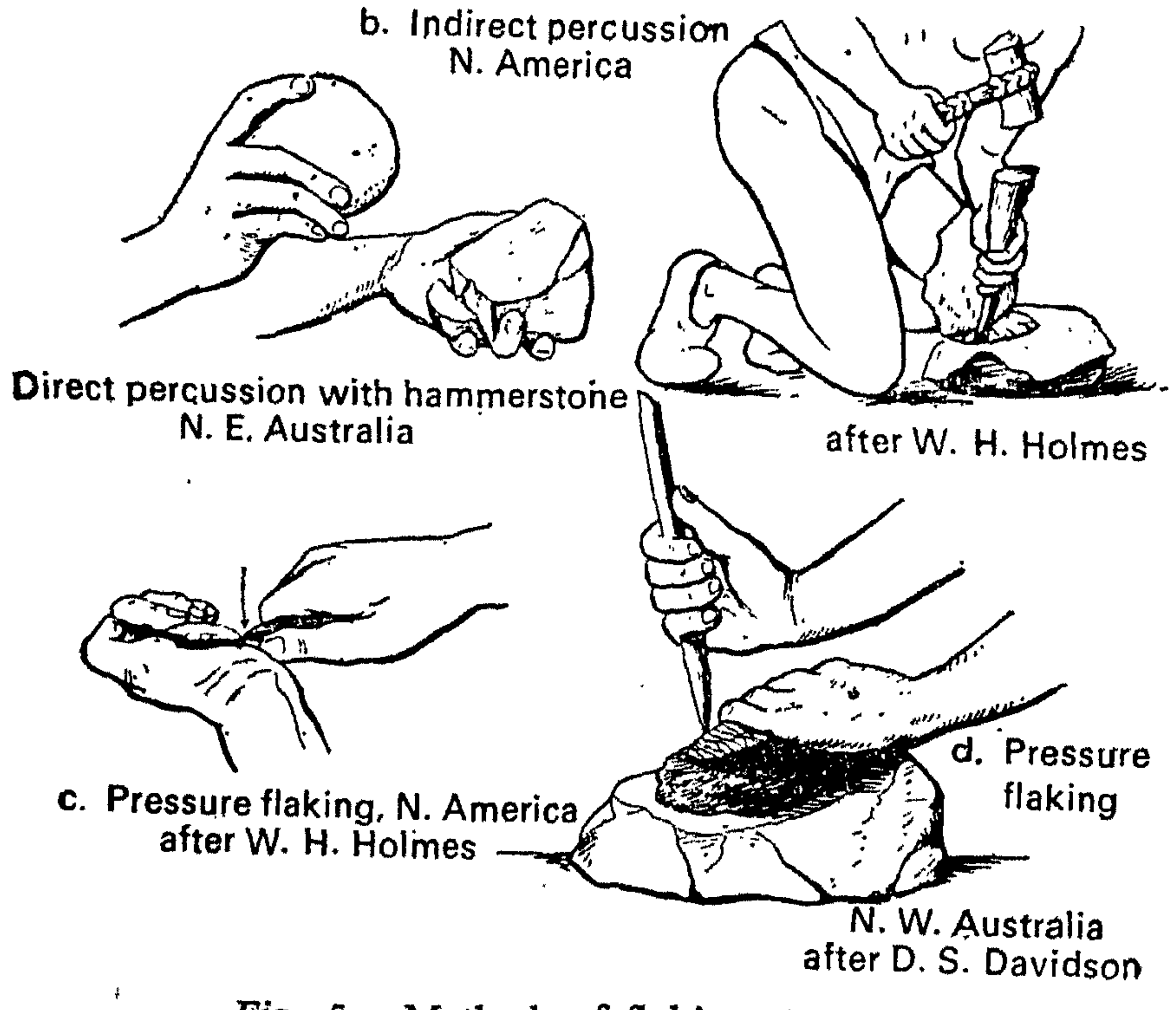

Fig. 5. Methods of flaking stone.

In flaking a pebble or a nodule, man definitely wanted to have: (*i*) a tool with an edge either along the length of the pebble or along the width of the pebble or on both the sides; or (*ii*) a tool with a sharp or dull point and a thick (rounded) or thin (flat) butt (the back portion). Initially, the resultant shape depended upon the original shape of the pebble, but gradually, as mastery over the technique of flaking was achieved, a shape very much different from the original was at times obtained. But by and

large, these early stone-tools, whether from India—north-western or peninsular,—or from Europe, Africa and west Asia, fall into standardized froms and groups. And it is still a moot point how such uniformity of shapes and techniques in stone-tools could be achieved during a period of history more than a 100,000 years ago. Whether man in India acquired this mastery by a slow diffusion of ideas or, while migrating from place to place, learnt it from others, or whether all these were his independent inventions—similar or identical needs giving rise to similar or identical forms in all the three continents—this question will continue to be debated until we have more exact means of dating the deposits in each region where the tools occur.

What is certain is that these tools, with short, long or broad edge, fulfilled a variety of basic needs of man. Examination of hundreds of such specimens, as well as experiments with a few by me and a few other archaeologists in other countries, particularly Africa, have shown that:

1. the specimens with sharp or dull point and thick or flattish butt, and known in conventional parlance as handaxes, were

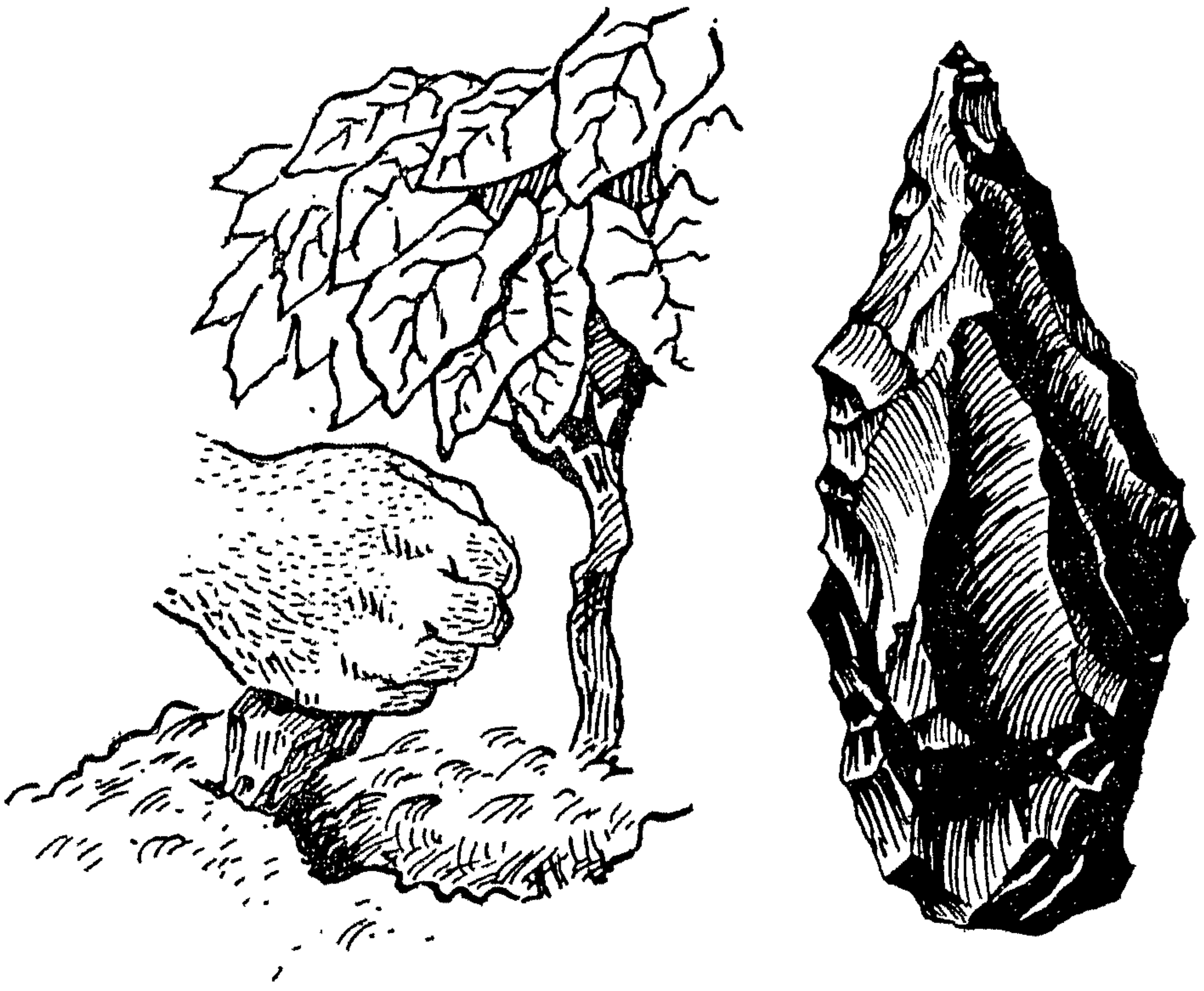

Fig. 6. Use of handaxe for digging roots, tubers etc.

primarily useful or used for digging up roots or stumps and opening up the bellies, etc. of animals;

2. the sharp edge of these tools could also be useful for cutting and scraping barks of trees, skins and meat, etc.;
3. the tools with a broad sharp edge—and a fairly thick butt—which may be rounded (U-shaped), square or rectangular or roughtly pointed, and known as cleavers—were primarily used for cutting up meat and bone. These cleavers were ordinarily not useful for cutting trees. Experiments have shown that their sharp edges get battered soon, whereas more than 90% of the cleavers examined by us retain their sharp edges.

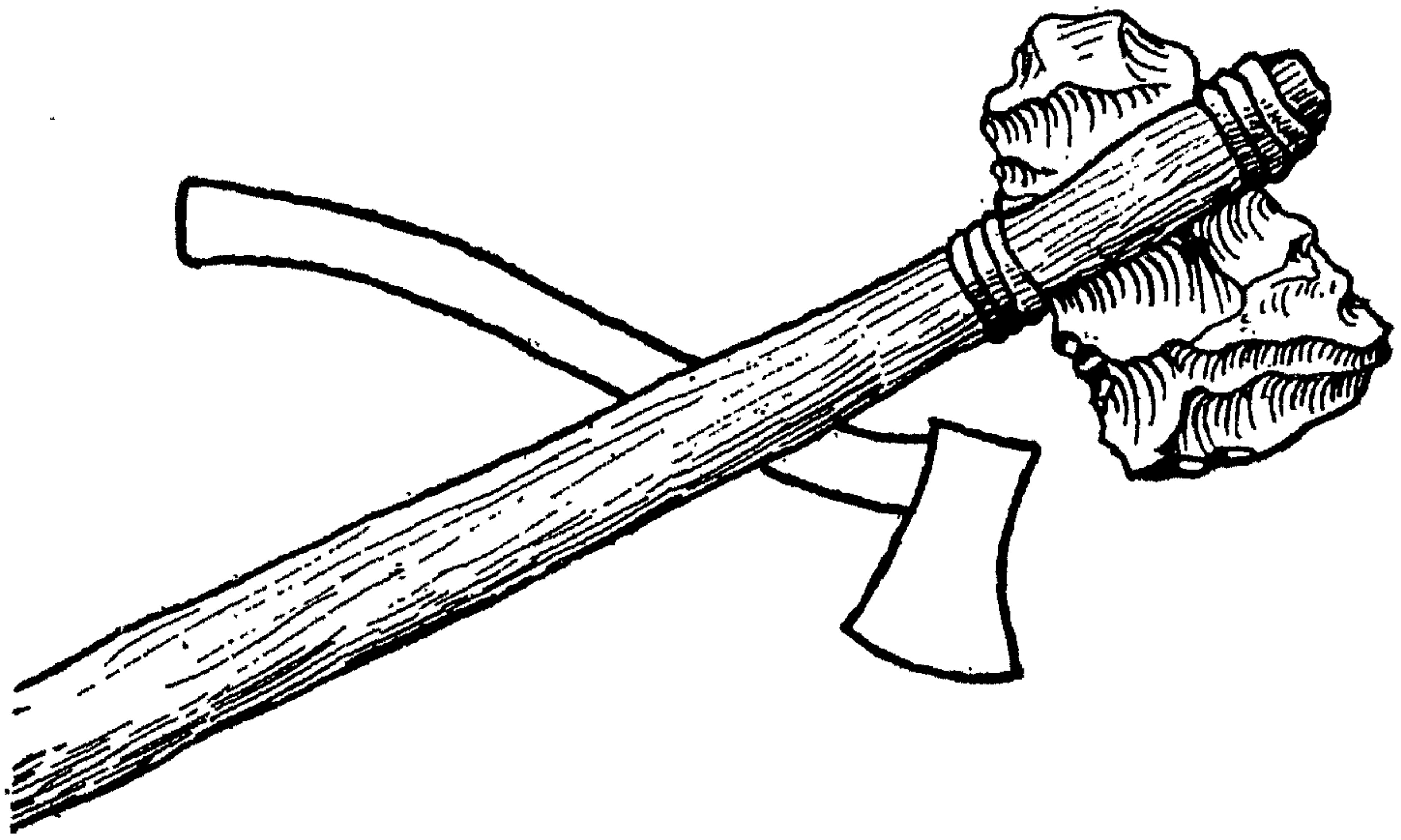

Fig. 7. Cleaver hafted (used) and for wood working e.g. felling trees etc.

4. Lying between these two basic forms-handaxes and cleavers—are choppers and scrapers. Both these categories of tools have a fairly thick, broad butt—either retaining the original pebble cortex or intentionally so made—and a sharp, straight or wavy edge. The choppers, as the name signifies, would be useful for cutting with force (at one stroke), and hence these are usually thick-sectioned and fairly large, whereas the scrapers are comparatively thin, and made on flakes.

Such stone tools—handaxes and cleavers—are nowhere used now, even by primitive tribes in Africa or Australia. So their use by Early Man can only be imagined by their shape and our

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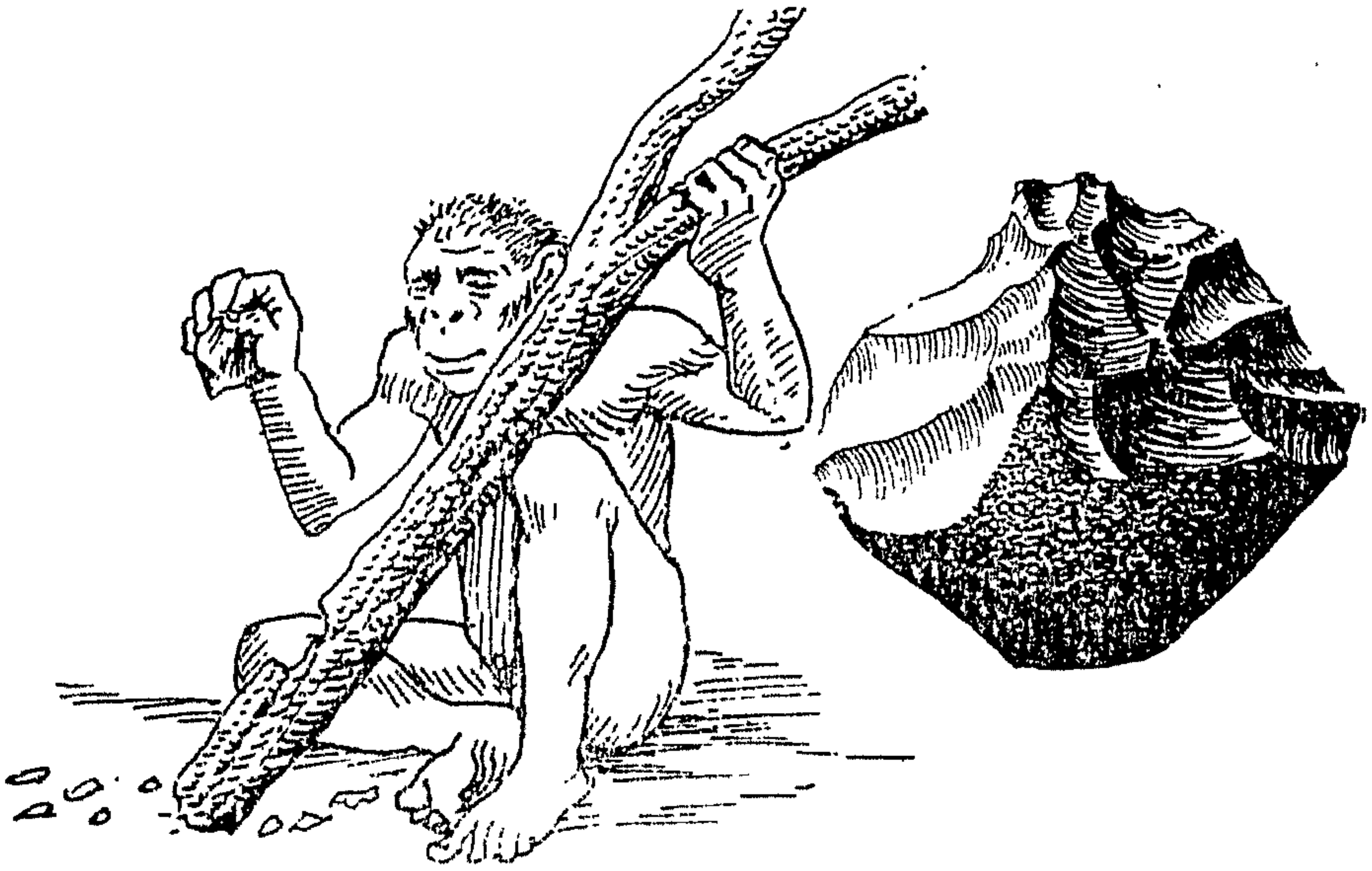

Fig. 8. Use of chopper for cutting wood.

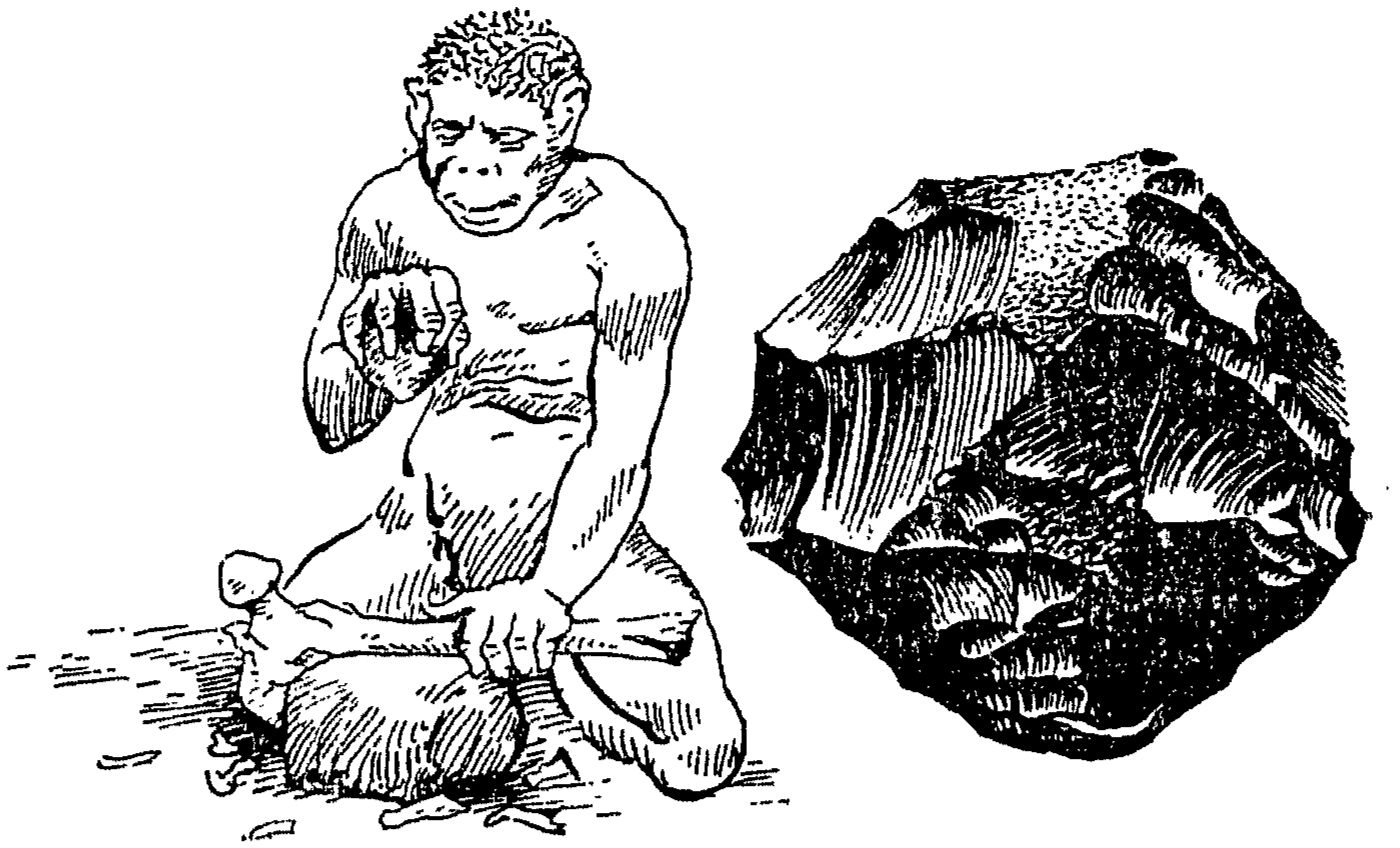

Fig. 9. Use of chopper for splitting bone.

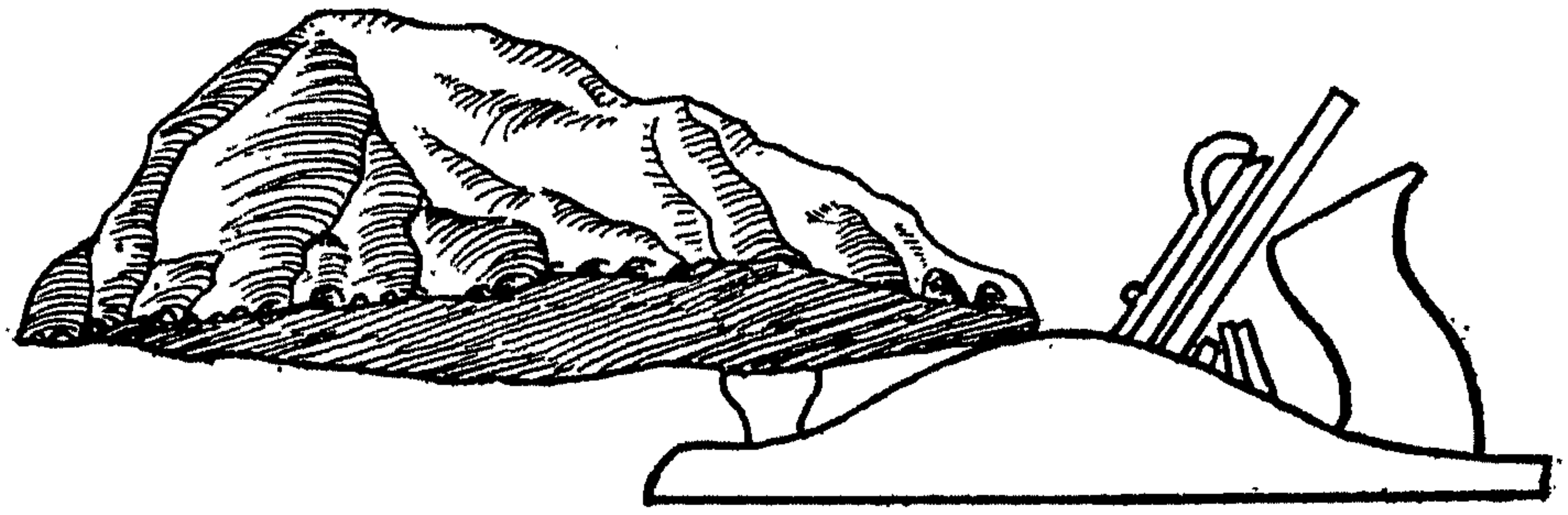

Fig. 10. Use of an end scraper for smoothing wood etc.

experiments with them.[1]

One thing needs to be emphasized here. Since these handaxes and cleavers had no handles, they could not have been of any use as weapons of offense either in a fight between man and man or between man and animal (unless it be assumed that highly pointed handaxes were hurled as spears). In a hand to hand fight the handaxes with a thick butt and a sharp, elongated butt might have been more effective. There is definite evidence, however, that man in India and elsewhere had learnt to haft these tools as, in course of time, he achieved mastery over the technique of flaking and developed a taste for producing finer and more symmetrical forms by first producing large flakes of a desired shape, and then turning them into cleavers and handaxes, which necessarily had an edge all round. This is evident from the fact that some handaxes and cleavers have a deliberately made 'waist' on either side near the butt and that some tools—cleavers and handaxes—have an edge all round the periphery, so that their use in the naked hand would hurt the hand of the user. This hafting could be done in two ways: (*i*) by placing the specimen in a flexible withy made of a creeper like a cane, and further strengthening or securely fixing it by applying resin or gum: and (*ii*) by placing the tool in a split wood or bamboo, and tying it with a creeper or any natural fibre, and then strengthening the whole thing by the application of gum or resin.

It must be mentioned that nowhere such spear- or dagger-like weapons with a handle have been found, but their existence is suggested by the 'waist' in a few forms, and by the discovery of long wooden spears from England and Germany. The latter fact

[1]However, Professor Desmond Clark who has considerable experience of handling these tools and observing African sites, says, "Unfortunately, we have, as yet, no direct means of knowing what many of these tools were used for. We are now in a position to show a connection between light-duty tools (flake knives, small scrapers and chopping tools) and butchery practices, but the large cutting tools appear to be only incidentally associated with meat-eating. It seems more probable that they were general-purpose tools connected with the collection of vegetable foods and animal food preparation rather than primarily meat mattocks and flensers for cutting the flesh from the carcases of large animals as has been previously suggested; they may, therefore, have been carried away for use on another occasion."

definitely proves that the Early Man knew the use of spears, and probably many of his weapons, which have perished, were made of wood.

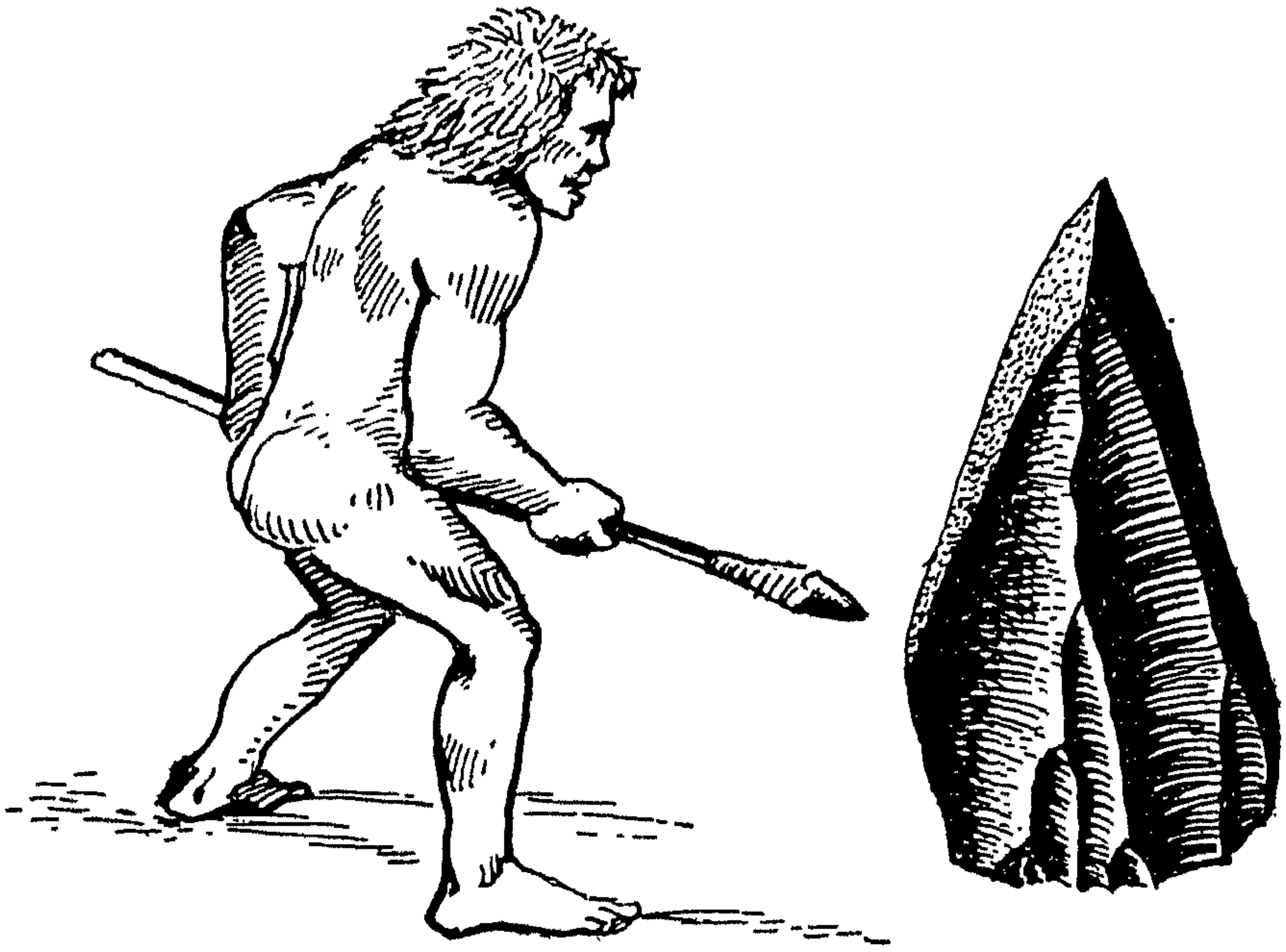

Fig. 11. Use of a point as spear—or lance-head.

It thus appears that this Early Man was a food-gatherer, warrior and hunter who hunted or fought with a spear.

Another aspect of these tools, though hinted above, needs also to be emphasized. With improved means of hunting and fighting, man was also becoming an artist. First he developed the technique of obtaining a flake of predetermined shape and size. This technique is called "Prepared Core and Flake" or "Levallois Technique," after the site where it was first noticed. A somewhat similar technique was observed in flakes and cores from a site on the river Vaal in Africa. Hence this technique is called Vaal Technique. In both these techniques a comparatively thin, symmetrical flake was obtained. This was often left as it was. But it has been found that at times such flakes were turned into highly symmetrical tools by further and very careful trimming. Since these were in the form of ovates, or heart-shaped objects, with a sharp edge all round, they are called ovate or cordate handaxes.

Such ovates and cordates are things of beauty, and occur irrespective of the raw material, in such coarse and intractable

material as quartz or basalt and, of course in fine-grained quartzite, sandstone and multi-coloured jasper. Anyone who sees and handles these artifacts will have to admit that the Early Man, though regarded a savage or barbarian, was also a true lover of art. These are the earliest examples of art for art's sake. For no use of them can be visualized, the objects being too small and fragile.

A few large and thicker ovates might have been used as dishes or *chakra*. For if placed in a sling and turned round the neck or even thrown otherwise with an aim, they would hurt the beast or the man aimed at. However, no used specimen has so far been seen by me.

The life of Early Man, though spread over a long stretch of time—perhaps five lakhs of years—does show three broad stages of development: (*1*) an era of unspecialized tools of stone, (*2*) an era of specialized tools and (*3*) an era of specialized and artistic tools.

It might be pointed out that though these three broad stages of development might be postulated, there were no very hard and fast compartments. These three stages of Early Man's development are seen irrespective of his habitat. That is, whether he lived in south India or north, in central or west and east India, in such forested regions as Assam, or the forests of Dang, and the open and lightly forested banks of the Sabarmati, and the lateritic plateau of Chhota Nagpur and the semi-arid Rajasthan. These stages also cut across the continental boundaries. Hence one has to conclude that as far as the archaeology—material culture of Early Man is concerned one comes across a steady taxonomic uniformity, that is, uniformity of tool types, irrespective of the place, though the time of occurrence might vary.

The same cannot be said about his environment outside India, though probably in Africa and much of western Asia, the conditions were not much different. In Europe, of course, sharp climatic changes occurred, but even here it is probable that the entire handaxe cultural phase of Early Man's life was contemporary with the Third Interglacial.

This can be ascertained by listing the animals found to be contemporary with man in Europe.

In India the Narmada alone has given us a fairly good idea of the contemporary animal world. This is corroborated to some

extent by the discoveries on the Godavari and stray finds from the Pravara. Recently the Son river in Uttar Pradesh is said to have yielded many large specimens of fossil animals. Among all these, the most common or ubiquitous are the wild ox (*Bos namadicus*), wild elephant (*Elephant antiquus*), and rhinoceros. There were other animals as well. Besides these, Early Man must have eaten fresh-water and sea-based molluscs, and numerous wild plants. Unfortunately, in the absence of data and, even if such data exist, means of retrieving them, we cannot be certain of this.

So also we do not have knowledge of the means by which Early Man hunted or trapped his game, big or small. The methods he employed have to be inferred from (a) the practices still current in India and in some of the preliterate tribes in Africa and Australia, and (b) the methods deduced from the occurrence of large masses of horses' bones at sites in western Europe.

Though Early Man could hunt only with his very primitive weapons like the so-called 'handaxe' or a wooden spear (as evidenced from England and Germany), he must have been able to trap large animals like the ox, elephant, rhinoceros, deer, etc., by using any of the following devices; (*1*) digging huge pits in the ground, and covering them with green and dry vegetation; (*2*) preparing *cul de sac*; and (*3*) driving the animals down a steep cliff, as depicted in some of the French cave paintings.

It is also increasingly felt that Early Man was not exclusively a hunter or a fisherman; he also used to gather the forest produce. So many kinds of wild fruits, grasses, plants and flowers exist today and are used by illiterate and preliterate people in the countryside, forests and hills which are unknown to the city bred scholars.

Of course, the botanists must examine these data and tell us how many of these are indigenous wild plants and shrubs. Also, further research in paleo-botanical-study of plants existing in prehistoric times—as well as a reliable knowledge of the climate will be necessary before anything in this matter could be said with certainty. However, the only redeeming feature is that in a country like India, the studies so far made show that no marked climatic fluctuations or upheavals like landslides and submergence of lands have taken place in the past, from which it can be

reasonably inferred that much of peninsular India was in the past as it appears today (barring, of course, a few peripheral changes in the coast line). In other words no major changes have taken place in the land-forms. So it seems certain that the forests on the hills, plateaus, valleys and plains had the same kind of vegetation as they have today, excluding, of course, only those species which we know to have been introduced there by foreigners in the recent past!

Another inference which is often made and appears reasonable is that the forests have been much denuded in the very recent past, so that some of the forests which today appear to us as thin and sparse were once fairly thick and dense. It is, indeed, necessary to say this because so often prehistorians infer the environmental conditions and habitat of Early Man from the observations of a few regions, and draw large conclusions. The fact, however, is that we have no scientific data based on pollen grains for much of peninsular India and that we are dependent solely on historical evidence. And this evidence does support the view, put forward here, that the forests as well as the fauna have retreated or disappeared from northern Gujarat, Maharashtra, Karnataka, Madhya Pradesh and U.P., since only some three hundred years ago lions were hunted around Ahmedabad, and rhinoceros in U.P., while the deer and tiger hunt was the popular pastime of many a king. This being the case, it is illogical to say that Early Man chose to live in lightly forested regions and that his successor preferred this or that environment. These deductions are proved to be erroneous as the tools of Early Man have been found in forests which are fairly thick today and were probably so in the past.

We are, therefore, not so positive about the exact nature of the changes in the forest cover and the fauna. What seems to be certain is that all over India—particularly in the peninsula—the river channels were filled with, first, coarse gravels and then silt. If the aggradation was caused by extreme aridity in some regions and heavy rain in others, some changes might have taken place in the nature of the forests and such fauna as must have been affected by drastic transformations of this kind.

What is also certain is that the rivers when, rejuvenated, began to flow again and scour out their beds, leave on their overflowed banks a material which was not so coarse. It was more

sandy and contained smaller pebbles of chalcedony, agate, etc., and less of quartzite (for instance, in the Narmada) and basalt (for instance, in Maharashtra). And the tools of man found in these gravels all over India are different in size, shape and technique. Normally, three or four main categories can be made out in any assemblage. As previously mentioned, we have: (*1*) tools having a sharp or dull projecting point, usually with a flat surface (natural or artificial), which, briefly, can be designated as (a) points and awls, and (b) borers; and (*2*) tools with a straight, concave or convex edge, on one, two or three sides (normally, all these have a flattish surface, natural or artificial).

Thus, from the point of view of the development or evolution of man's way of life as deduced from the objects left by him, there seems to be an obvious, visible fall or deterioration in their quality. Instead of the large and beautiful (symmetrical) hand-axes, cleavers, scrapers and choppers we have now small and insignificant things. In comparison to the past record, the number of basic types of tools found now is also smaller. These small tools, whether used by the bare hand or even after hafting, could hardly be effective as weapons. If that is the case, how did the man, all over India and in other parts of the world, defend himself against wild beasts and other enemies? Only one answer seems to be possible: the various kinds of scrapers, particularly, were used for skinning, cutting and turning out finished tools/weapons of wood, bamboo and bone. And all the three, being of perishable nature, have not survived. This inference now finds confirmation. Everywhere, particularly in Africa, excavation of camp sites of this period of man's life has shown that such tools were not primary tools, but employed only for fashioning larger tools and weapons of wood and probably bone.

Some of the specimens with a sharp point might have been hafted in long or short wooden shafts and hurled as spears. It is doubtful whether at this time the bow had been invented, for some of the thin, flat and sharp tipped, triangular specimens could also have been hafted in reeds and discharged as arrowheads. The efficacy of both these would increase, if their tips were besmeared with poison.

Disappointing as these small tools may appear from the point of view of size and (often) workmanship, from the larger evolutionary point of view these insignificant—looking specimens have

definitely an importance for the prehistorian.

In the first place, it is these tools which paved the way, both technologically and typologically, for the next stage. The earlier tools, though impressive and fine looking, were cumbersome and often not very effective as cutting tools. Actual experiments showed that animals like the goat and cow can be more easily and much more easily and quickly skinned with thin blades than with sharp edged handaxes, scrapers and cleavers. Just as our small, thin-edged razor blades, evolved from earlier large, one-edged razor blades, the thin, sharp, one or two edged stone-blades and true points developed from the thick points and scrapers. And it will be shown further that these blades and points became the fore-runners of compound tools and weapons (though by themselves these barbs or teeth looked miserably small).

Secondly, it is presumed (when the find-spots of these small tools are plotted on a map) that the mobility of man had increased. If water and game were available, he could penetrate into deeper forests as it was not difficult for him to carry these primary tools. Thus it is that such small tools turn up at all sorts of places, irrespective of geographical considerations. River banks and sea-beaches, low hills and valleys, open places and forests, everywhere man made his home. His tools have been discovered in the dense, humid, jungles of Assam (Garo Hills), in the forests of Dang and Madhya Pradesh, as well as in the dry, semi-arid plateaus of the Deccan and the deserts of Sind and Rajasthan (though it is possible that in some of these regions the climatic conditions and vegetation were different, not in kind but in degree, from what they are today).

An equally remarkable and intriguing thing about the man of this period is that everywhere he preferred a fine grained material. Thus he gave up quartzite in Madhya Pradesh, Uttar Pradesh, Orissa, Bengal, Andhra Pradesh, Karnataka, Gujarat and Rajasthan; and trap or basalt in Maharashtra, Saurashtra and Kutch. And it is not yet ascertained whether this change was deliberate or made necessary because the sources of the earlier material—such as river gravels—were submerged or became inaccessible. The latter might have been true in a few cases, but in a large majority of cases—e.g., in Maharashtra, Madhya Pradesh and Rajasthan—the choice seems to be deliberate. If

so, that choice was wise, since it was based on man's experience of nature.

Fine-grained rocks like chert and chalcedony give a much better edge than quartzite, granite and ordinary basalt. Secondly, these rocks are much harder than the basalt, and do not weather so easily as ordinary or dyke basalt. A third reason is also likely. All these materials—cherts and chalcedonies—are much more beautiful to look at than the grey, drab basalt and the quartzite, though the latter does have fine shades and even texture. But as today, once the fashion started, it spread, though it is still a mystery how this new fashion had gripped man practically all over India (barring parts of Andhra and Karnataka, where quartzite has also been used). In fashioning these points-borers and scrapers, the man has no doubt shown some skill and ingenuity. He can rightly be described as the precursor of the present day artisans, mechanics and engineers, who with minimum work give maximum results, which is what the man of this Stone Age has done.

Unlike his predecessor who chipped and flaked a large pebble or nodule for turning out a handaxe, the Middle Palaeolithic man deliberately sought such pebbles, nodules or pieces which had oval, ovoid or triangular forms and a flattish surface. Then by striking here and there, at one of the elongated, natural ends, he turned out a point or a borer, leaving the rest of the surface untouched. The same practice was followed in the case of scrapers. The result is that in a large assemblage, such coarse-looking tools are in a majority, and one studying them is likely to conclude that the man who fashioned these tools was devoid of skill and refinement. This view is no doubt justified, but one cannot say that the man was ignorant of the finer side of this art. For in any collection, one does find symmetrical specimens—scrapers, points and borers—which are things of beauty. Particularly charming are those in which multi-coloured, fine-grained chert or jasper was used. Again, this man also knew how to remove flat, triangular or oval flakes from a coarse, intractable material as quartz, let alone chert, chalcedony and jasper. Thus one cannot escape the conclusion that the Middle Palaeolithic man was clever, ingenious and artistic, although he might also have been idle or utilitarian in his outlook to some extent, since he has left behind him masses of crude-looking tools all over

India.

However, things were changing in much of western Europe, including Russia, and in such countries of western Asia as Egypt, Palestine, Syria, Iraq and Iran. Either as a normal development of the earlier flake tools consisting largely of scrapers and points, which were sometimes made in a highly ingenious Levallois or Prepared Core technique, or as a new invention—man in these parts of the world had by now learnt to fashion not only thin, symmetrical flakes, but even blades as well.

These blades are, indeed, the precursors of our knife-blades and many other tools of iron and steel, or of copper and bronze of the earlier period. It is this step which truly bridges the gap between the past and the present. For we have only replaced the material and refined the technique. But there has not been a fundamental difference in the final outcome. A definite existence of this techno-cultural stage was for long regarded as unknown in India, for many scholars believed, and some still believe, that it was confined to the rock-shelters and caves of western Asia and Europe. Recent work in India leaves no doubt that this forward leap was also taken in our country. So far the best evidence comes from the Kurnool and Chittoor Districts of Andhra Pradesh and very recently from the Jalagam District of Maharashtra. The evidence of a slightly inferior nature has also been obtained from Karnataka, south Bihar, west Bengal, south U.P., Madhya Pradesh and western Maharashtra. On the banks of two small streams—the Rallakallava and another which issues from the towering Tirupati hills—one gets a complete story of the Stone Age man. The surroundings were perhaps ideal. Raw material for the different kinds of tools was at hand. So also were game (though no remains have been found) and a great variety of forest produce. The rivers flowed perennially, though at times in narrow streams. All this attracted man from age to age. And among his relics of all the four Stone Age periods, those of the Third Stone Age—called here the Upper Palaeolithic—are found in small, separate clusters on the reddish soil, which forms now the top surface of the river banks. This seems to be significant because, when this man came, the earlier camp sites were either sub-merged in water or hidden under the river deposits. For some reasons unknown to us, the sites where he manufactured his tools are found in distinctly separate places.

The present surface of the Rallakallava was formed when the stream raised its bed and started to flow here at the end of the Early Stone Age. It has therefore turned reddish, being exposed to the sun and rain during all these thousands of years. And what did this man manufacture? Stone tools, but surprisingly quite different from those of his two earlier predecessors and also of his successor. He also discarded the older raw material —the variegated quartzites from the Tirupati hills, and the cherts and jaspers. But by and large, a greenish, fine-grained quartzite was preferred, which was available in elongated pebbles and cobbles.

And by employing a specialized technique, the man turned out masses of slender blades, uniformly symmetrical, long, thin,

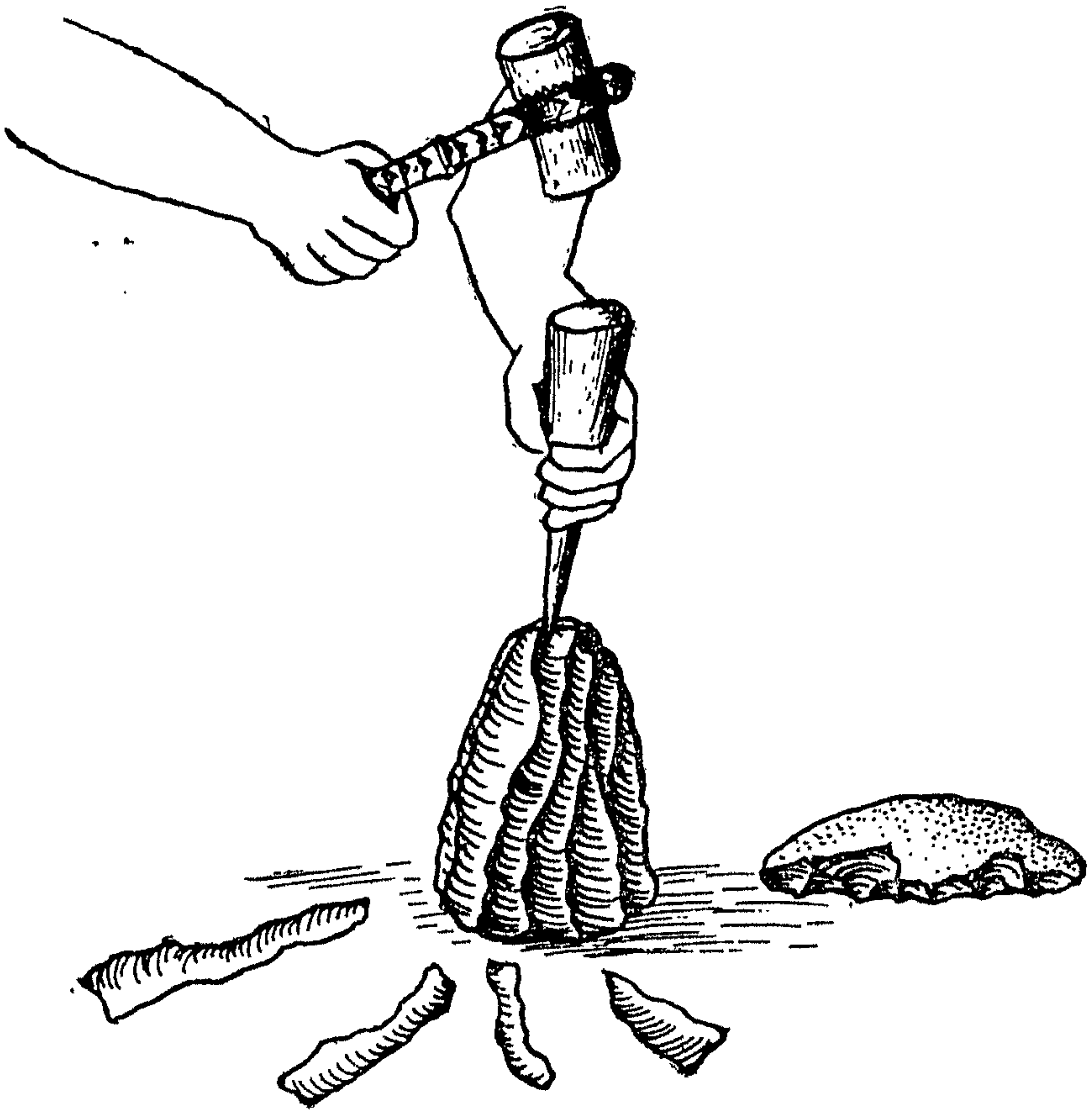

Fig. 12. Blade production by indirect percussion.

and parallel-sided. Some are deliberately blunted on one longitudinal side and have a curved end as in our penknife blade, while a smaller number, known as gravers or burins, are chisel-like at one or both ends and could have served a specific

purpose, such as making engravings on stones or bones, or for removing a sliver from a long bone and later turning it into a tool.

Though, occasionally, such chisel-ended tools were found in earlier tool assemblages, the chisel-edges were not obtained by the technique used in making these burins. Examining burins found at Chittoor, for instance, one can see that a blow was given to them vertically at one end of a flake or a thick nodule or core, and a thin spall removed from one or both sides of the pointed or narrow end. It is this technique which entitles this industry and the entire assemblage to an independent and separate techno-chronological niche among the Stone Age assemblages. Its chronological aspect is indicated by the location of the tools on the old reddish land surface.

Its age is further indicated by the occurrence of identical tools in the limestone caves of Kurnool. Two short-season excavations in caves near Betamcherla have yielded hundreds of remains of animals which are partly extinct and were a feature of the period existing between 20,000 and 30,000 years ago. Geologically, this period forms a part of the Pleistocene. Among the animals so far identified, we have the following species: *antilope*, *gazella*, *cervus* (deer), *bos* (cattle), *boselaphus* (nilgai), *equus* (horse), *hystrix* (porcupine), *rhinoceros*, *sus* (boar), *hyaena*, *felis* (tiger), *viverra* (civet), *ursus* (bear), *presbytis* (monkey), etc. These discoveries have contributed a new chapter to Indian prehistory. Much more about this age and man will be known when work on a planned basis is undertaken. The distribution map of the blade and bur in industries is getting filled up. To Chittoor had been added Kurnool. Nellore cannot be a blank. On the west, Bijapur and Gulbarga Districts in Karnataka have afforded a glimpse. This is followed by a few districts of Maharashtra and Madhya Pradesh. In Uttar Pradesh, small but excellent evidence of the age of burins and blades is supplied by the river Belan, Allahabad District. Here, in a long section, these blades occur towards the top, sealed by recent silt and fine gravel, and, above, two earlier deposits of coarse and fine gravels and other silts. This stratigraphical position is also available in Singhbhum, Bihar, which has been carefully examined.

There is no doubt, therefore, that we are now witnessing the same slow and evolutionary stages in man's tools and weapons

as already evidenced first in western Europe and then in western Asia. These evolutionary technological stages are also indicative of a gradual change in man's way of life which still depended on hunting and the gathering of a variety of forest produce.

In Europe, towards the closing stages of this period, the variety of game was becoming less and the man was forced to hunt only reindeers. Whether such a situation arose or could have arisen in a country like India where there are no marked climatic changes is doubtful.

It must be said that in general man was heading gradually towards intense specialization. The gravers or burins having a narrow, sharp edge have no other purpose, except for engraving and detaching small portions of long chips from a limb bone or soft stone or wood. Thus was laid the foundation of the art of engraving and carving.

The same may be said of the thin, long, parallel-sided blades and backed blades with a curved end. Not only are these examples of a perfected art of flaking, they also show that with them man had reached the peak of his craftsmanship in stone. Our present knife blades are pure copies of the Stone Age blades, with which man had already begun to make bladelets

Fig. 13. Use of stone blade as a pen-knife.

and arrowheads. None of these could be used simply by the naked hand. Thus man had discovered, already at such an early

age, the principle of the compound tool or weapon which, as we know, is at the root of the creation of Inter-continental Ballistic Missiles and similar offensive weapons.

The life of this period must have been richer and more varied than in the preceding periods of man's life. But unless the

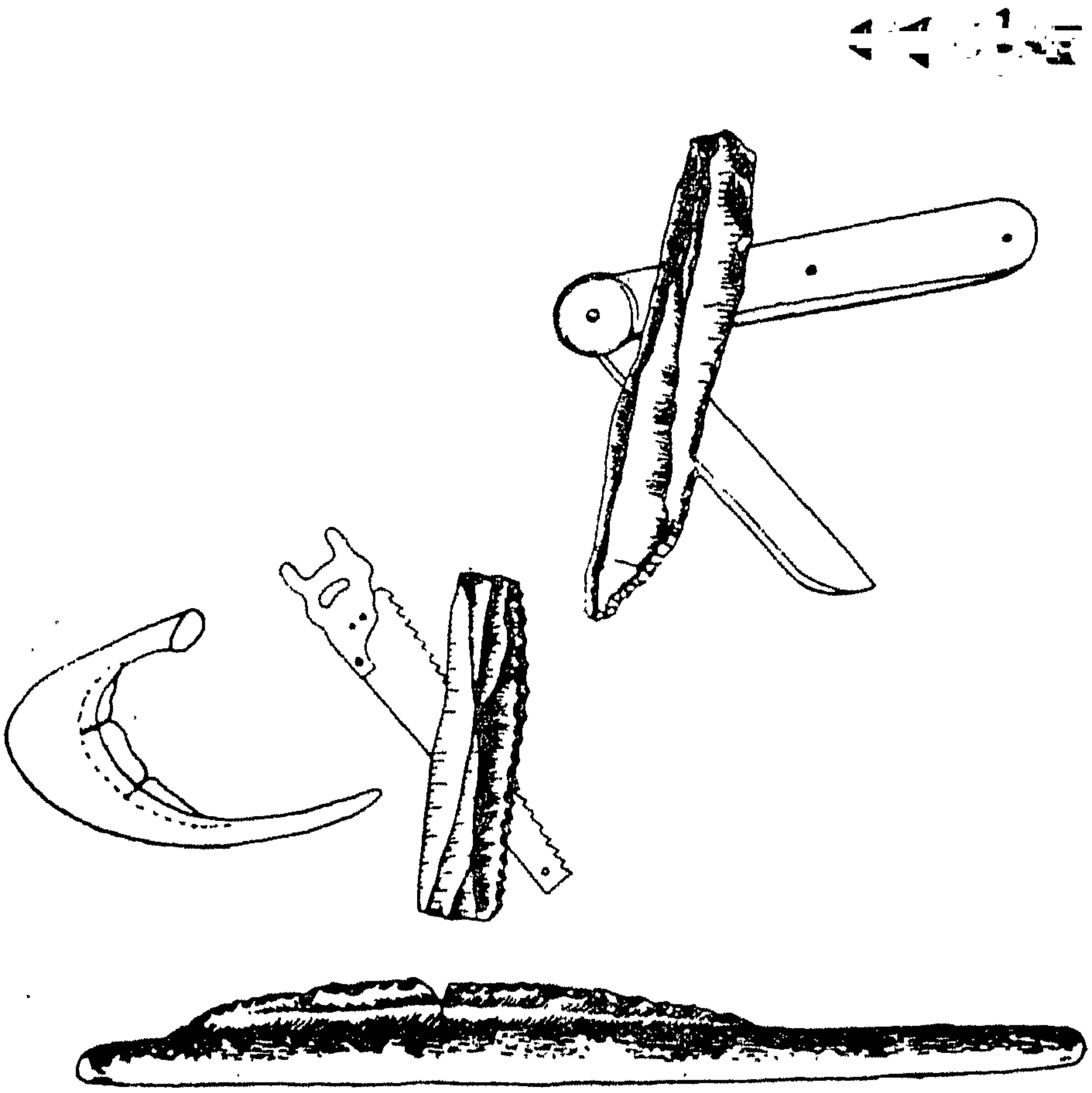

Fig. 14. Parallel-sided and pen-knife-shaped stone-blade with a denticulated edge, each being the prototype of the steel saw and the pen-knife. Above, in black, a harpoon with stone barbs.

caves and rock-shelters in Andhra, Karnataka, Madhya Pradesh, Uttar Pradesh and Manipur are excavated, or such camp sites in the plains located and studied, our knowledge will remain confined to the specialized stone technology[1] of this period.

[1]Explorations in the valleys of the Belan and the Seoti situated in the districts of Allahabad and Mirzapur respectively are being regularly conducted since 1967-68. *See Indian Archaeology—A Review, 1968-69,* pp. 33-35; *1969-70,* pp. 35-38; *1970-71,* cyclostyled copy, pp. 68-72. There is

Since this was written (1972), a small female figurine in bone has been found in the gravels of the Belan, and fragments of ostrich shell, bearing incised decoration, have been found in excavations at Patne, Dist. Dhulia. These have been dated by C-14 determinations to about 20,000 BP. These dates are in general agreement with the dating of the Upper Palaeolithic in Europe, Asia and Africa.

That the Upper Palaeolithic blade and burin industry has indeed existed, if not everywhere, at least in several parts of India, is also suggested by the presence of small stone tools, called microliths. These appear for the first time as a by-product of the fine thicker blades during the Upper Palaeolithic period itself. For some unknown—probably climatic—reasons, not only has the whole Upper Palaeolithic art of Europe vanished, but with it traces of the specialized stone technique have also disappeared. What is left to us in many regions are just masses of microliths.

It is conceivable that in many parts of the world, great climatic changes occurred. As a consequence, the surviving man had to adopt to the changing conditions. These microliths, as the name aptly suggests, are very small, often less than ½ inch or a few millimeters in length, still smaller in width, less than ⅛ inch or one or two millimetres, and have almost no thickness. At first sight even scholars, let alone a layman, would doubt if these insignificant, chips of fine-grained stones, such as chert and chalcedony, could be of any use at all. But they have

no doubt that the area is very rich in stone tools of several Stone Ages, as well as fossil bones of animals, among which *Bos*, *Equus*, *Elephas*, *Bubalus*, *Cerus*, *Gharialis*, *Chelonia*, *Tragulid* and *Unio* have been identified by V.A. Sastry of the Geological Survey of India. He equates the fossils from the lower conglomerate—the Cemented Gravel I—with the lower zone of the Narmada; that is, they belong to the Middle Pleistocene, but those from the Cemented Gravel II and later deposits are regarded as younger than the Narmada alluvium. *IA-R*, 1968-69, p. 39.

Thus, considerable antiquity is now vouchsafed on faunistic and lithological grounds for the various deposits on the Belan and the contained industries. However, a *true idea* of the latter can be had only when a full well-studied report of the entire material or even one of its parts is available. All the statements made so far in these brief annual reports about the types of tools, their raw material, percentages etc., need to be corroborated by full statistics and drawings of sections and tools.

played a definite role in man's gradual development towards a better way of life. This has now been amply proved by three things. First, these microliths, along with other house remains, have been found not only loose on the surface, but in caves and rock-shelters, in open-air sites on rivers, and marshy areas in seas. Secondly, with a wood, bone or clay handle stuck with some mastic, these microliths have also been recovered from a grave where they must have been placed intentionally. Thirdly, such microliths have been found not in one state or one continent, but all over the earth—Europe, Asia, America and Australia. However, as these microliths do not appear everywhere at the same time, we cannot say that the microlith-using man in India, Europe or Australia were necessarily contemporaries. What is important to stress is that for some reason as yet not fully known, man had to go through this stage.

In Europe, most of western Asia and now in India, this microlith-using man seems to have emerged from a stage when slightly larger, broader and thicker stone chips or blades were used for cutting, piercing, engraving and scraping purposes. And again for some reason not yet definitely known, this microlith-using stage was followed by another when man largely discarded such tiny stone chips, but resorted to making again larger and thinner blades of stones. And above all, for cutting and dressing wood he now made large tools of stone which, first, he used to make even and, later, polish. This stage of renewed employment of larger stone tools has been called the New Stone Age or Neolithic. The stage which preceded it and during which microliths were used was called Mesolithic, meaning thereby that it was between the Old and New Stone Ages. Where such fine, positive evidence is not available, the Microlithic Stage is generally assigned to the Late Stone Age. Until recently, this was the practice in India as well. Gradually, however, sufficient evidence has been accumulated to enable the scholars to say that all over India, such microliths or microlith-using men had lived after the Old Stone Age and at the beginning of the Holocene or the present geological age. However, India being a large country, almost a sub-continent, with varying climatic and topographic features, it is but natural that the occurrence of microliths all over this vast land might not belong to one period or to one climatic phase. But if we take a rapid review of the major

occurrences of microliths as known today, then a broad, generalized picture of India at that time does emerge. Beginning from the north and proceeding southwards along the east and the west, we have the following important zones: 1. north-west Frontier—Peshawar—caves and rock-shelters; 2. the old Gangetic plains (there are high, reddish sands and terraces, covered by the more recent brownish alluvium); 3. Chhota Nagpur Plateau—red lateritic soil; 4. rock-shelters and caves in the Kaimurs and old river banks in Allahabad, Banda and Mirzapur districts of U.P.; 5. rock-shelters and caves in the Vindhyas, Madhya Pradesh; 6. old river terraces in Orissa; 7. old river terraces and caves and rock-shelters in Andhra; 8. old sand dunes, called *teries* in south India; 9. old river terraces and open sites in Karnatka and Maharashtra; 10. old river terraces and sand dunes in Gujarat; 11. old sand dunes and river terraces in eastern and western Rajasthan; and 12. foothills, along the western coast.

Without much detailed and scientific work, it is difficult to say for certain what exactly the climatic conditions were in all these twelve major regions of the Indian sub-continent at the time when these topographical features were formed. However, studies so far carried out in Gujarat, Rajasthan and south India suggest that it was during an intensely dry period that a people using microliths had come to live in Gujarat, Rajasthan, the *teries* of Kanyakumari and the lateritic plateaus of Bengal, Bihar and Orissa. Probably similar conditions prevailed elsewhere also, particularly in southern U.P., and also along the west coast.

One thing, however, must be remembered—that in examining dry or wet climatic conditions in any part of India, one has always to keep before oneself what is happening today in that region. Neither in Gujarat nor in Rajasthan or south India, there is such extreme aridity that nothing can survive. Nor were there periods of such exceptionally heavy rainfall that man or beast could not live. There were only periods of comparatively heavy or less rainfall. This is evident from the remains of animals that have been found in excavations at Bagor (west Rajasthan), Langhnaj (north Gujarat), Adamgarh (Madhya Pradesh) and several sites in Uttar Pradesh (though the details about the animals are not available). This study of animal remains is extremely interesting and important. Not only does it tell us how

the man was subsisting on the flesh of various animals he hunted, but a careful study of the bones also shows whether the animals were domesticated or wild, whether they belong to the species which love dry or humid climate, and whether the animals—that is, their bodies—were cut open with stone or metal tools/weapons.

Thus a picture, though only in outline, of the environment in which man lived may be reconstructed. Such a picture will gain in depth if we can develop means to recover pollen grains from different kinds of soils. These alone would throw light on the exact nature of the vegetation in Gujarat or Rajasthan, for instance. At the moment, this is not possible. We can only indicate what kind of animals lived and were the source of man's food at that time. With more careful contextual excavations, one may, with the help of the zoologist, be able to estimate the amount of subsistence-protein food the man could have, the size of the animal and the size of the population.

We shall begin with northern Gujarat, for here considerable work has already been done, with the result that we have a fairly detailed picture of the man who lived there at least 4,000 years ago (though the actual time is likely to be 6,000 years).

What is known as Gujarat today consists of four distinct geographical divisions. Kutch and Saurashtra were once islands, but have now became peninsulas. Both also exhibit a geological composition which is different from that of the mainland Gujarat. The latter is again divisible into north Gujarat, central Gujarat and south Gujarat. Northern Gujarat stretches roughly from Taranga Hills in the north to a little south of Ahmedabad. Its principle river, the Sabarmati has on the western side an indistinguishable border with Kutch, and its eastern side, which it shares with Rajasthan and Madhya Pradesh, is hilly and forested. The southern limits vary. This area of roughly 10,360 square kilometres is made of sandy silt and the sand deposit is at least 18 metres thick, as seen from the river sections of the Sabarmati, and lies in one flat mass over the entire land, except where violent summer winds have scooped out the surface and heaped this sand in the form of small mounds, creating, consequently, shallow ponds at places.These mounds, locally known as *timbas*, lie in the south-western and north-eastern directions and very often three or four such *timbas* enclose a pond.

These sandy mounds, when not disturbed by man, support a scrubby vegetation, the most common being the thorny *babul acacia*, ber (*jujube*) and karvanda. At least two of these thorny fruit-bearing trees seems to be indigenous and were undoubtedly the source of food for the Stone Age man (though so far no seeds or pollen grains of these fruits have been found). Whether other large shade-giving trees, such as the pipal, baniyan, neem, and mango, grew at that time is not known. Today these and other trees, such as the seedless varieties of guava, flourish, as the sandy silt is quite fertile, if irrigated. Excellent crops of wheat and bajra, even rice and oil seeds such as 'seasamum and plantago (*isphagul*), have made the farmers quite prosperous.

However, some four to five thousands years ago, when the microlith-using man lived from Rajasthan in the north to Baroda and beyond in the north-west and from Radhanpur in the west to Kapadavanj in the east, the entire country must have presented an endless flat sheet of sand, dotted here and there with low mounds enclosing small ponds. These mounds were clothed with light scrub vegetation, whereas along the river banks and valleys trees grew more abundantly. Further eastwards around Modasa where the plains touch the low Aravalli range, vegetation was probably more dense. It is these which supported animals like the rhinoceros, while the nilgai, four kinds of deer, wolf, etc., could live here as well as in the scrubby jungle.

These animals were probably trapped by the various methods still current among the hunters, primitive as well as advanced, though it is possible that animals like the deer were hunted with bow and arrow. However, no intact specimen of a stone-tipped arrow or a harpoon or a sickle survives in Gujarat or anywhere in India. But it is presumed that crude, flattish, pointed, triangular pieces served as arrow-heads. These might in addition be smeared with poison. Whatever might have been the exact methods of trapping and hunting these wild animals, as well as the water-loving animals like the tortoise, they were brought to the top of the low mound overlooking the ponds. Here there were temporary camps or permanent residences. The animals were butchered and skinned; not only was the entire flesh removed, but even the bones were broken and the marrow taken off. Probably all this meat and marrow was roasted, though only a few bones appears charred.

This work of cutting, chopping and skinning was evidently done with tiny stone tools—microliths. Hundreds of these have been found along with an equally large number of large and small bone fragments at Langhnaj during some ten short excavations between 1942 and 1963.

And the raw material for manufacturing these tools—such as long and short parallel-sided blades, blades with a blunt back and slightly curved point as in our penknife, thick and thin triangular points—had to be imported from some distance, for these are all made of agate, chalcedony, jasper, occasionally lydianite, which are not locally available. The nearest place would be Kapadvanj on the Majham river. Even the few pebbles of quartzite had to be brougnt from the banks of the Sabarmati.

We cannot say for certain how long man lived here. But here he made tools, butchered animals, perhaps roasted them, and buried the dead in a very crouched position. Of the 14 bodies recovered during 20 years of digging, 13 are in this position. These include both men and women. A young woman about 18 years old was so carefully buried with her legs bent almost at right angles, and hands similarly folded, that it seems logical to infer that soon after her death the legs and hands must have been tied with a string or cord made of some vegetable fibre. While placing the body among the debris, a definite orientation was observed. The head was placed to the north and the feet to the south. This small detail and the fact that the dead were intentionally buried within the habitation provide us with some clue to the spiritual life of these hunters and food-gatherers of north and central Gujarat. They had some idea of life after death and had some regard for their dead.

It is now 30 years that the first clue to this vast prehistoric culture extending over some 1,03,600 square kilometres was obtained. So far only one site, Langhanj, has been systematically and extensively dug. Others, like Akhaj and Valasua in north Gujarat and one on the Mahi in central Gujarat, have only been scratched. With the help of modern scientific techniques, certainly much more could be known of this Stone Age man in Gujarat.

This Gujarat man was fairly tall (over 1.68 metres) and thin, given as he was to constant movement. His head was long, with

a slightly prominent ridge above the eyes, and perhaps he had a protruding lower lip. His teeth had been worn out by a coarse diet. It is difficult to say how long he continued to live this kind of semi-nomadic, hunter's life. The sandy deposits are between 1.2 and 1.8 metres thick and have yielded very few other objects, besides thousands of microliths and bones. Pottery, which gives an important clue to the inhabitants' way of life, is insignificant in the lower half metre. These are few and ill-baked, and give no idea of the shape of the vessel. The number of potsherds increase considerably in the first metre and these belong to wheel-made pots. An iron arrowhead and a copper knife were also found at this level. All these indicate that though by and large the people in north Gujarat were in a semi-nomadic Stone Age life, some regions in the neighbourhood enjoyed a higher and more advanced state of life. And it is from these regions that they seem to have borrowed, first, the solitary copper knife and, later, the iron arrowhead, as also the art of making wheel-made pots. Or, these might also have been imported.

We now have some idea of such a Stone Age man in south-eastern Rajasthan. So far only two skeletons have been found, but other finds include remains of houses with rubble-paved floors, kitchen refuse containing bones of animals cut and charred, and literally thousands of most beautifully made microliths. As in Gujarat, the occupation deposit is not more than 1.5 metres. Stratigraphically, it can be grouped into two main periods, but according to the contents as determined by levels, these seem to be three periods. Interestingly enough, chemical analysis of the soil has now confirmed the existence of three periods and also given some indication of the climatic conditions.

The largest number of microliths are found in Period I, dated to about 3,700 BC, slightly fewer of them in Period II dated 2,800 BC and still less in Period III.

As in north Gujarat, the man buried the dead in the house in an east-west direction and also provided some food for the dead. His most precious possession—copper arrowheads—was also buried with the dead. The Bagor man, as he is known, was in every way culturally superior to that of Gujarat. Even his diet consisted of animals which were largely domesticated and not wild. Why this difference should exist, cannot be explained at

present. Nor are we able to understand why the Bagor man shows no contact with the advanced culture of Ahar near Udaipur. The three small flat copper arrowheads with a hole for attachment and tiny 'wings' occur also in several Harappan sites, but as Misra has shown, these seem to have been derived from Africa or the Aegean. Anyway, such are the mysteries of archaeology and Indian culture that islands of primitive culture manage to survive for centuries side by side with advanced cultures or civilizations. And that is what seems to have happened in south-eastern Rajasthan.

The whole of Madhya Pradesh, but particularly the Vindhyan sandstone range which runs across the state from Bhopal in the west to Satna and beyond in the east, including several small outlying regions, must have been the home of such a Stone Age population for centuries. Numerous occurrences of microliths in rock-shelters had been reported earlier, during the last 50 years. But it is only now that a few of these are being properly excavated. Even these excavations, so far, are on a very small scale, so that we do not have much idea of the lifeways of the people inhabiting these caves and rock-shelters. But it is here, rather than in the open river or lake or hill sites, that a fuller picture of that life may be had. Many of these rock-shelters bear paintings in several over-lapping colours, indicating that these paintings have been made over a long span of time. And it is conceivable that at least one of the overlapping paintings would belong to the period when the man making microliths lived there.

The conditions of living seem to be ideal in these gently sloping sandstone hills with flat grounds in between. These as well as the hill crevices support not too dense a jungle in which deer, antelope, wild pig or hog, and carnivora like the wolf and tiger roam even today. The overhanging rocks, with occasional passages between two rocks, afford very convenient living spaces, even for modern man. Hence these sandstone formations have been chosen by man of all ages—from the man of Stone Age to present day preliterates and modern sadhus.

Evidence from the rock-shelters at Panchamadhi in Madhya Pradesh and Morhana Pahad in the present Mirzapur District of Uttar Pradesh tells us that not only the man of this Stone Age occasionally lived here, manufactured tiny stone tools from

pebbles he had to import from some distance and cut up the animals he hunted, but it was also here that he buried the dead. And sometimes one particular rock-shelter in a particular area was preferred, with the result that at one such place we have no less than seventeen skeletons heaped over one another.

It would be, indeed interesting to find out why this practice was followed. Surely non-availability of space could not have been a consideration, for there are plenty of rock-shelters and caves in the region. Probably there was some superstition or a particular rock-shelter was regarded as a family 'vault.'

Since no report on these Mirzapur human skeletons is as yet available it is not possible to say what relation these physical types might have with the aboriginals who still inhabit the region. Nor can we say what exactly were the animals they hunted or butchered. Again, much more could be learnt of the lifeways of the people if these rock-shelters are more fully or horizontally excavated.

We are sorry to leave this very interesting and promising line of inquiry about our not too distant past in this incomplete stage of knowledge. But enough has been said to indicate how immense the field is. At one time, between 3,000 and 10,000 years ago, almost the whole of India, barring perhaps Keralaand the slowly emerging coastal belts on the east and west (though here too the hills overlooking the sea may contain caves with

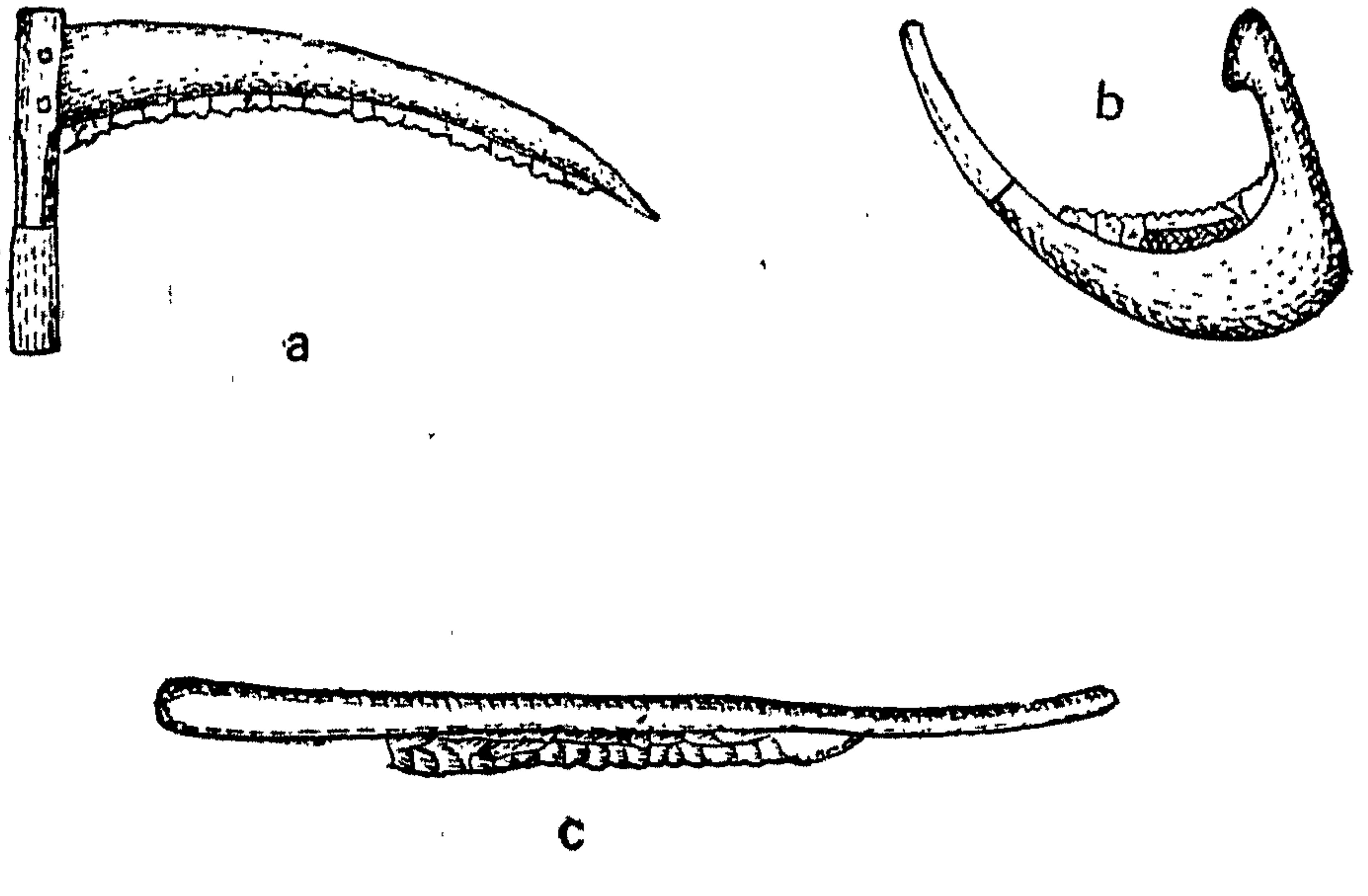

Fig. 15. Flint sickles: (a) Acebuchal, Spain; (b) Kahun, Egypt; (c) Fayum, Egypt.

microliths), had passed through this semi-nomadic stage when hunting, fishing and all the daily household activities were carried out by man with the help of tiny stone-tools known as microliths.

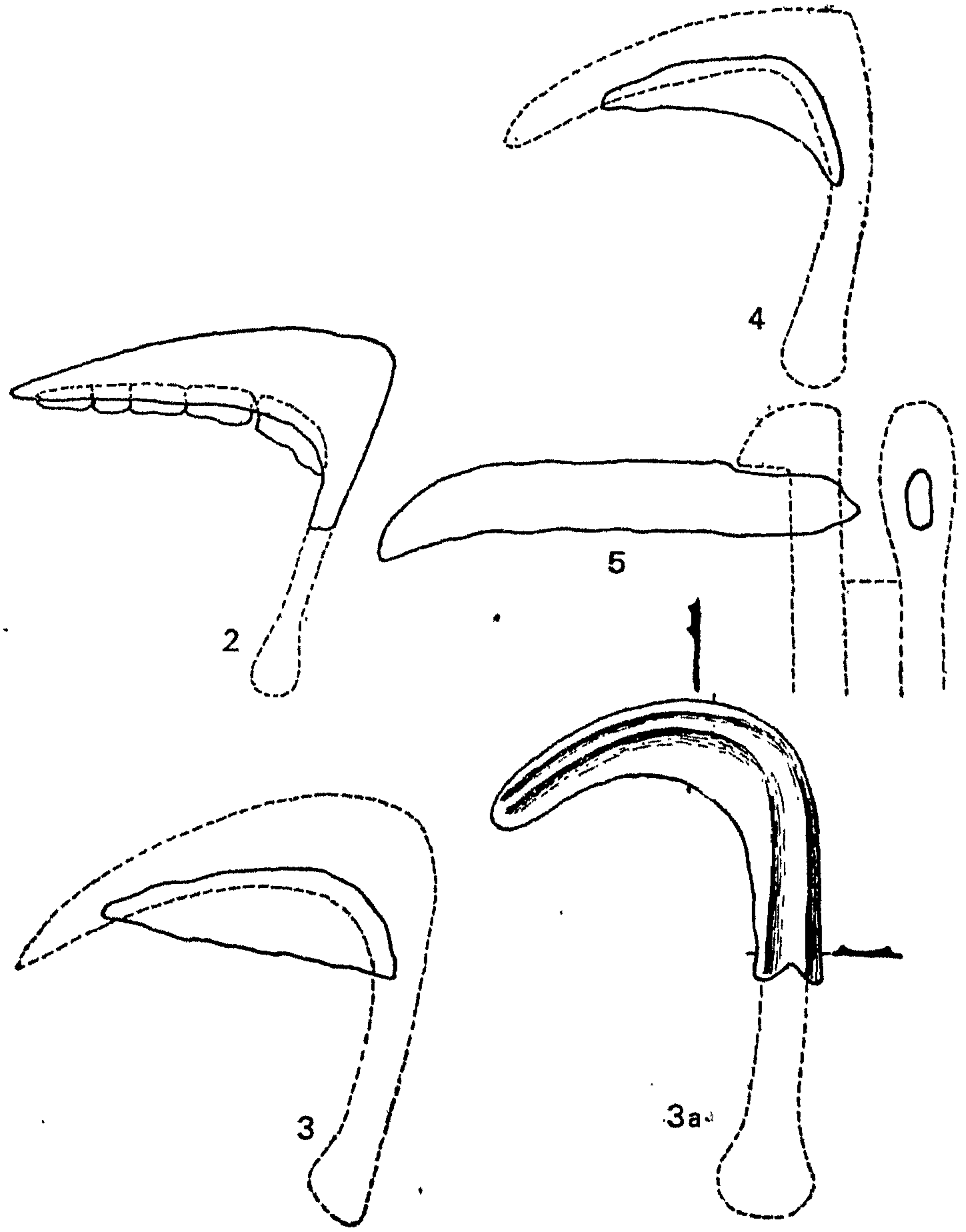

Fig. 16. Evolution of the iron sickle.

From the point of view of the size of the tools, and very often the finish, this was once considered a retrograde stage, because the earlier stone-tools were bigger and much better worked. Still, technically and from the point of view of mass production, and

considering also the fact that the microliths everywhere served as compound tools/weapons, this stage has to be regarded as an advance on the former stages.

Secondly, this is also the time when man first learnt the art of making earthen pots and domesticated animals like the dog, pig, goat, sheep and cow/ox.

The climate and vegetation at this time might have been generally more dry than they are today, but their intensity varied from region to region, almost exactly as they vary today between the various divisions of Gujarat or Maharashtra for instance.

What has been said here is borne out by the evidence found in south-west Asia on the Iraq-Iran border on one hand, and in Jordan-Israel and Turkey on the other. In the former, sites like Shanidar cave, Karim Shahir, Zawi Chemi and Jarmo, and in the latter Natufian caves, Beidha, etc., yield first only microliths and remains of wild goats and, later, bones of domesticated sheep, querns, baskets and reaping knife—all showing the unmistakable transition from specialized hunting with microlith tipped arrows to the gradual domestication of animals and beginning of a settled way of life in which agriculture had begun to play an important part.

Though no site showing such a transition from hunting-gathering to farming has so far been discovered in India, there is every hope that this will be found. While this book was being prepared, information, partly published but mostly unpublished, was received about the discovery of a rich microlithic culture on the left bank of the Ganga in the districts of Allahabad and Pratapgarh. Of the four sites so far known, Sarai Nahar Rai has been excavated. This has yielded microliths, remains of mud huts on wooden posts, hearths and grave pits with 8 human skeletons, buried in an extended position with a west-east orientation.

Though a calcified bone has given a C-14 date of 10,050± (10,345±110), that is 8,100 BC or so, we should wait for a fuller and more reliable study. As it is, the two reports are conflicting. What is important in the context of the present discussion is that here on the old bank of the Ganga, when it was a swamp, the Stone Age man might have taken the first steps in farming, though now the old river bank is sandy, full of 'kankar' and hence unfit for cultivation.

We may now present all that has been described above in non-technical language from (a) the Geological, (b) Chronological, (c) Conventional 'classical,' (d) Dominant technological and (e) Functional-economic points of view (*See* Comparative Table I).

Geologists divide the most recent period in earth's history into Early Pleistocene, Middle Pleistocene, Upper Pleistocene and Holocene.

Archaeologists and prehistorians first divided this period into Old Stone Age (Palaeolithic) and New Stone Age (Neolithic). The former was later sub-divided into Early Palaeolithic, Middle Palaeolithic and Upper Palaeolithic.

When they were not sure of this division in the region lying south of Sahara in Africa, terms of wider application (Middle and Late Stone Ages) were employed.

Since this subject was first developed in France, terms used by prehistorians from all parts of the world to designate periods are coined after the French sites—viz., Chellean, Acheulian,

Fig. 17. Polished stone axe hafted in angular bone or wood handle.

COMPARATIVE TABLE

	Geological Chronology	*Descriptive Stone Age Chronology*	*Conventional Type Site Name Chronology*	*Dominant Lithic Technology*	*Functional Economic Chronology or Stages*
	A	B	C	D	E
I.	Early Pleistocene	Earliest Stone Age	'Oldowan' and 'Cromerian' (?)	Chopping Tools and Flakes	Hunting, Fishing (?), and Food gathering with unspecialized tools
II.	Middle Pleistocene	Early Stone Age or Early or Lower Palaeolithic with three sub-divisions	(a) Chellian or Abbevillian (b) Acheulian (c) Advanced Acheulian (artistic, symmetrical hand-axes and cleavers)	Bifacially flaked handaxes and cleavers made on a side-flake technique	Beginning of specialised tools for hunting, fishing and food-gathering. These may be in three stages
III.	Late Middle or Early Upper Pleistocene	Middle Palaeolithic	Mousterian	Flake tools of various types	Fourth stage of specialized tools
IV.	Late or Upper Pleistocene	Upper or Advanced Palaeolithic	Chatelperronian, Aurignacian, etc. in Europe	Punch-struck blades from cylindrical cores; burins	Fifth stage of specialized tools

	Geological Chronology	*Descriptive Age Chronology*	*Conventional Type Site Name Chronology*	*Dominant Lithic Technology*	*Functional Economic Chronology or Stages*
V.	Holocene	Mesolithic or Late Stone Age	Natufian, Maglemosian, etc. in Europe, and others in W. Asia and Africa	Microlithic components of composite artifacts	Hunting with bow and arrow, and beginning of agriculture (harvesting with toothed sickless made of microliths)
VI.	Holocene	Neolithic	Jerico, Jarmo, Hacilar, Catal Huyuk	Ground stone tools (axes, rubber stones, etc.) for wood-cutting as well as preparing plant food	Domestication of plants and animals; regular agriculture and permanent settlements

Levalloisian, Mousterian and Aurignacian.

Of late, some scholars seem to prefer purely technological terms, while from the point of view of the general reader, functional and economic terms, being easier to understand, seem to have a greater significance.

As regards the earliest pebble tools and flakes, and even the later handaxes and cleavers, we have no positive proof of how exactly they were used. But there is little doubt that very often a tool was used for various purposes, though it appears from the changing forms in handaxes, cleavers as well as thick-butted scrapers/choppers that more and more specialized functions were intended for the tools, which were used for such purposes only. However, as is often the case even today, an artifact—knife or a pair of scissors—might be used for cutting as well as piercing if such need arose and if the right tool was not available on the spot. So from a careful consideration of the forms of stone-tools, as well as the remains of animals found in camp site or butchering site, only some specialization in hunting methods or the hunting of certain types of animals may be inferred. For drawing the latter inference, no attempt has been made to test the evidence from any site in India.

CHAPTER 3

COLONIZATION AND BEGINNING OF CIVILIZATION

ALL THAT we have said in the preceding chapter relates to the various phases of man's life in India when he was, as far as is known today, a nomad, subsisting largely on the collection of fruits, vegetables and grains which grew wild, and hunting and fishing (when the latter was possible).

This state of life is not only witnessed all over India and in other parts of the world (of course not *always* at the same time), but is also envisaged and described by the composers of the Puranas and the authors of the early and later Jain literature. For example, one of the words for 'earth' in Sanskrit is *prithvi,* which means that it has been 'made flat' (*pritha*) for cultivation. The king who made the earth flat is called *Prithu.* Thus what the archaeologists of the 19th-20th centuries have inferred deductively was intuitively visualized by Indian seers some 2000 years ago. The reason for citing this otherwise unknown or unnoticed view of the development of civilization is that it is in refreshing contrast to the widely prevalent view that man has fallen from grace, from a most perfect and happy life—*Satyayuga*—that he has gradually tumbled down to the most imperfect and unhappy *Kaliyuga.* Such an idealistic view of life was also cherished by the Greeks, who had postulated Ages of Gold, Silver, Copper and Iron, in that order.

Archaeology, during the last hundred years and more, has shown that the Indian seers had a point. They had 'seen' the truth, although it was not in India that man had taken the *first* step towards a more civilized state of life, but outside. If out-

side, where?

Formerly, some twenty years ago, it was believed that man had first learnt the art of agriculture, domestication of animals, making pots and pans out of clay, and constructing houses in unbaked lumps of mud in parts of western Asia, such as the fertile plains of the Tigris and Euphrates, and the sub-montane area of the Zagros mountains of Iraq and Iran. Such an environmentally congenial region, called the 'Fertile Crescent,' is found to have extended westward and eastward, and included the fertile sub-montane plains of Turkey (Anatolia) and Iran.

There are reasons for such an assumption. It is in these regions that the earlier forms of wheat and barley, the two grains or cereals which man is known to have used at least for the last 10,000 years, and the ancestors of domesticated varieties of goat/sheep, cow/ox and pig are still found in a wild condition. Secondly, it is in these regions that archaeologists have been finding for the last 40 years the traces of an earlier civilized life, first at Ur and Eridu in southern Iraq, then at Hassuna and Jarmo in northern Iraq, then at Catal Hüyük, etc. To these have been added Beidha and other sites in the Levant and Anatolia.

All these sites, dotted over Turkey, Syria, Palestine, Iraq and Iran are older by thousands of years than those found in Afghanistan, Baluchistan, Pakistan and India. In fact, when the earliest occurrences of houses, pottery, grains, domesticated animals, writing and figurines of men, women and bulls are plotted on a map, then even a layman will have to say that there is a definite, well documented, eastward and southward migration trend of *all* the elements which constitute civilization—material as well as religious and spiritual.

These eastward and southward occurrences of the various traits of civilization may be explained or accounted for in two ways: either as gradual diffusion of knowledge or ideas or as actual migration of people with the knowledge of house-building, town-planning, agriculture, domestication of animals, religious practices and writing. Sometimes, these immigrant people might have brought with them specimens of pottery, tools and weapons, and such other small objects which they could or wanted to carry with them.

There is also evidence now of a migration from the countless islands which form south-east Asia. Here are found rice—which

is the staple diet of people living in eastern and southern India—domesticated animals and the earliest ground or polished stone-tools. There seems to be little doubt that some of these elements have reached India either through diffusion of ideas or migration of people.

Thus archaeology, basing itself on the knowledge of ethnographic and linguistic distributions in India, now confirms a westward, northward and south-eastern origin of the peoples and cultures of India.[1]

Prehistory in India has a most fascinating and at the same time a most difficult detective task to perform. This is the disentanglement of the various ethnic, linguistic and cultural strands that go to make up the Indian culture and society today. It will succeed in doing this only if archaeology supplies it with the minimum requisite evidence, supported by ethnographic, anthropological and linguistic data.

In the previous chapter we have seen that almost all over India, irrespective of different environmental features such as dry, semi-dry or even humid climate and sparse or thick vegetation, man eked out a livelihood in which microliths, judging by our present knowledge, played a prominent part. This man was for all purposes a hunter-fisher and fruit-gatherer. We are yet to discover a site in India showing a gradual transition from this to a more advanced stage of life, which we may call 'Beginning of Civilization.' However, suddenly we begin to find in Baluchistan beautiful painted pottery, traces of houses, terracotta figurines, ornaments made of semi-precious stones, and the dead buried within the houses or partly cremated and then buried in pots. This evidence can be dated to about 3500 BC.

[1]There is increasing tendency all over the world to look for indigenous origins. Thus, Graham Clark discussed the invasion theory in British archaeology. Recently, Australians have claimed distinctive regional development for their Early Stone Age Cultures (Bowler *et al*, 1970, p. 58), whereas another scholar has tried to account for many of the features in Egyptian prehistory to trade etc., and not colonization (Adams, 1968, pp. 194-215). However, as explained or argued by me elsewhere, India is a living example of great cultural changes brought about by small or large groups of immigrants either as invaders, refugees, or even traders, Sankalia, 1973.

Baluchistan and Afghanistan

Why should these traces of civilization be found in Baluchistan? Today and throughout the recorded past, Baluchistan has never boasted of an organized way of life. The people living there are mostly pastoral nomads. Agricultural and permanent habitation is confined to a few areas only. The reasons for these are quite natural. The country is hilly and cut up into valleys by several small hills and plateaus, through which flow small streams, which are mostly dry. The rainfall is also very scanty, with the result that extreme climatic conditions like dry, hot summer and intensely cold winters reign there. However, wherever irrigation is possible, wheat as well as fruits like apples, peaches and apricots grow. It appears that in the past an organized attempt to build dams (called *gabarbands*) near the mouths of small and large streâms had made larger settlements possible. The rains might also have been more regular then. So the shepherds and cowherds roamed from one valley to another in search of pasture. But many people lived on pillage and robbery, as even now a settled way of life does not exist there.

Notwithstanding all these shortcomings, Baluchistan received the first fruits of civilization because of its proximity to Iran, a gateway to India. This neighbouring country of Iran forms, as mentioned above, the easternmost extension of the 'Fertile Crescent.' And here conditions for the birth and quickening of civilization could be had much more easily. Even copper, which was so very necessary for making more durable tools and weapons, could be had in Kermanshah in southern Iran and Seistan. It was, therefore, natural that Iran should pass on some of its rich and varied legacy to Baluchistan and Afganistan, which in their turn passed it on to Sind and the Punjab.

Once in the Indo-Gangetic plains, these cultures either developed or perished, depending upon their intrinsic strength and that of the opposite forces.

Thus Indian history and prehistory present a continuous and arduous attempt at adjustment between these external and internal forces. That these Irani, Afghan and Baluchi influences had affected and were continuously affecting the border provinces was well known. But it was little suspected that these had also penetrated India and, on the western coast, reached as far as Kutch and Saurashtra (though both these regions exhibited a

much greater cultural mix-up than those within the heart of India).

Thus in any study of Indian prehistory, Baluchistan and Afgahnistan will always play a prominent part. The Bolan, Khyber and Gomal passes have rightly been regarded as gateways to (and from) India, not only throughout the historical times but right from prehistorical times.

Baluchistan, however, does not present a uniform cultural development. Owing to its peculiar morphological build-up, plateaus and narrow valleys, and also because of the indigenous settlers (whoever they might have been) and the new arrivals—in the form either of cultural influences or of people—several regional and sub-cultures appear to have sprung up. Again, in the absence of large-scale excavations, these regional cultures are known by the distinctive pottery which a site or a group of sites have produced (either from small trial excavations or from surface collections). Sometimes in addition to the distinctive pottery, a few details about the houses the people lived in, ornaments, tools and weapons they used, the way they disposed of the dead and the religion they practised are also known. Thus these regional cultures begin to assume a personality, however vague. It is also certain that when a strong government existed, either in Sind and the Punjab or in Iran and Afghanistan, it managed to impose its will over the whole or a major part oı Baluchistan. This again we know only archaeologically—through the distribution of pottery and other culture traits.

As at present, the following main periods may be recognized: *I.* period of separate cultures, all inspired by Iran or Afghanistan (*e.g.*, Kile Gul Mohomed; to this should now be added Nal Shahi Tump and Anjira, (*c.* 3500-3000 BC); *II.* the Indus Harappa Civilization (Kulli, Mehi, Dabarkot and Periano-Ghundai); and *III.* disintegration once again into regional cultures after the weakening and disappearance of the Harappan Civilization.

It was only during the paramountcy of the Indus Civilization that places along the Makran coast, as well as some places in southern, central and northern Baluchistan could be fortified with a stone/mud wall and bastions, and that these towns could boast of well-aligned houses (though so far no site has been dug so extensively as to give further details about roads and drains). When the country enjoyed this civilization, tools like knives etc.

were made from long chert blades, all imported from Sind. So also was the case with the various types of pottery used here. Presumably, the fine gold found at one of the sites seems to belong to this culture, though so far nowhere the characteristic seals of steatite or copper have been discovered. These should have occurred at least on the coastal sites of Sutkagendor, as these were trading centres, unless there is evidence to the contrary, showing that no proper transaction took place here and that goods were only sent out or received. What is important is that at sites like Mehi, Kulli and Dabar Kot, not one or a few, but several terracotta figures of a mother goddess and bulls have been found in such a context as to suggest that they belonged to large shrines or places from which these religious symbols were exported. In this connection, it is noteworthy that such bulls and mother-goddesses have not been found at Lothal or Kalibangan or Surkotada or several other sites in Saurashtra.

Though no grains, either charred or embedded in pottery, or wall remains have been found, there is little doubt that wheat and barley, perhaps even rice and lentil, were eaten, because at Mehi, Kulli and elsewhere have been found large grinding stones with equally large, flat rollers. And this, incidentally, may be said to be a speciality of Baluchistan, because the writer has not come across such rolling stones (though Stein notes that these were still current in Baluchistan).

As soon as the Indus Civilization weakened in Sind and the Punjab, new local cultures sprang up.

Afghanistan and North-West Frontier Province

The role of southern Afghanistan and the Gomal plain below the Takht-i-Sulaiman in the development of civilization in the Indian sub-continent has been highlighted by Professor A.H. Dani's explorations and excavations at Gumla and Hathala. This part of the north-west frontier had remained unexplored so far. From the number of sites, their size and richness as shown by the excavation at Gumla and Hathala, Dr. Dani seems to be right in holding that Baluchistan, being hilly, was perhaps a refuge area, whereas the Gomal plain is environmentally the most suitable one for the growth of an urban civilization like the Indus. So far only one small site, Gumla, has been excavated, but nearby there is the Rahman Dherai, which in an aerial

photograph looks like the Indus city in negative. At Gumla, five successive cultural periods are found. Of these, Period I is a ceramic (that is, without pottery) but has large community ovens, charred bones of animals and microliths. Period II, which seems to follow after some interval, contained remains of mud houses, fine wheel-made painted pottery, copper/bronze tools, chert and flint blades. There is some deterioration in Period III, and pottery shows some new features. Over the burnt ruins of Period III are found those of Period IV which are, judging by their nature (pottery, etched carnelian beads, weights, cart frames), Harappan. Here the Harappan culture appears in a full-fledged form, and is not seen as a natural growth from the earlier one which has great affinities with that found at Kot Diji in Sind. On the contrary, as at the latter site, the Harappan man is seen as a destroyer.

Lastly, the Harappan culture itself seems to have been done with both at Gumla and Hathala, by a people who buried their dead, including human beings and animals, in round/oblong graves, and among the animals so sacrificed (or simply killed and buried) have been found the bones of a horse! These, along with the terracotta figurines of a horse, suggest that the destroyers were well acquainted with this animal, which was so far believed to be unknown. Hence there is a suggestion that these cremation practitioners might have been a branch of the Aryans. However, other antiquities found in their graves are in no way different from the Harappan!!

Thus the problem "Who are the Harappans?" remains unsoleved; on the contrary, it gets more complicated, because they themselves are seen as destroyers, at least at some sites in Sind and NWFP. Secondly, we still do not have distinct clues about the destroyers. The nature of the materials found, seem to vary from one region or sub-region to another. And this should be so in a vast region encompassing thousands of miles.

Though the new discoveries in the NWFP do not help solve the old problem, still they are helpful in understanding the genesis of civilization. Both in the plains of the Gomal (Gomati) and the Indus (Sindhu), as well as in the hilly Baluchistan, the earliest people were hunter-gatherers. Then came the pastoral farmer who made or used excellent pottery, exactly as it was

made in Afghanistan. Thus the directions from which this civilizing influence came are not in doubt. And this as well as the subsequent Harappan culture has to be regarded as 'colonizations,' as they show no local development, except in the matter of religion, wherein the terracotta figurines of serpent goddesses as well as others, with short stumpy arms, sometimes raised overhead, or some holding a small tray and with featureless elongated heads and prominent breasts, seated with legs extended, seem, indeed, unique and are quite different from the so-called Zhob and Harappan figures. The terracottas with extended legs recall much earlier ones (*c.* 6000 BC) from Alisar Hüyük in Turkey. All these are doubtless mother goddesses, as their physiognomy indicates.

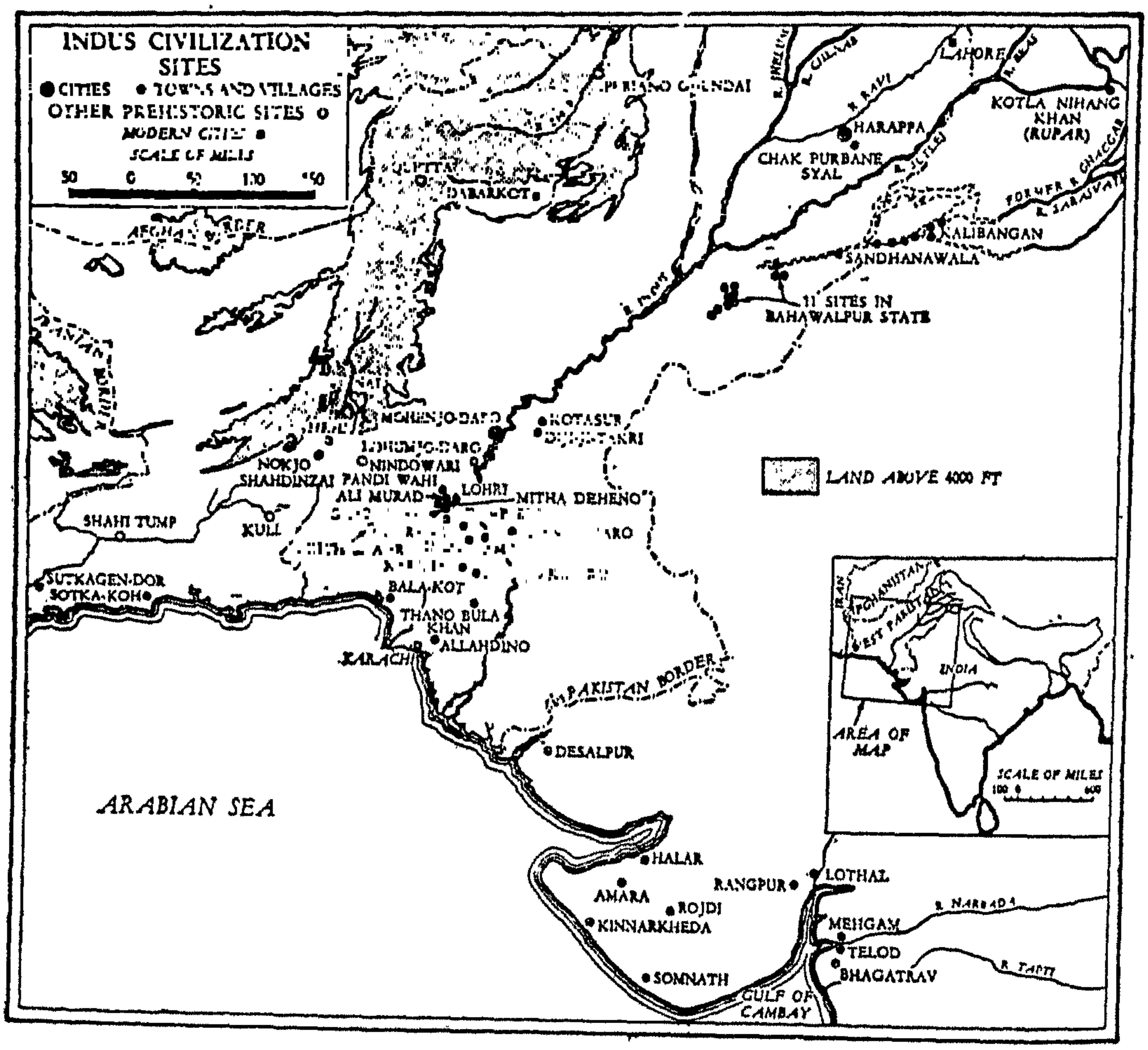

Fig. 18. Map showing distribution of Harappan sites (after Wheeler, 1968). Add Gumla in North-West Frontier Province and Surkotada in Kutch.

Pre-Harappan Cultures

It appears that some of the Iranian influences, instead of remaining confined to Baluchistan, had penetrated further eastwards, and given rise (in current jargon) to the Pre-Harappan or Early Harappan Culture or Civilization in Sind, Punjab and Rajasthan. It is, indeed, a pity that till today we know so little about it. From the excavations at Kot Diji (Sind), Kalibangan (North Rajasthan), Harappa (Punjab) and surface finds from several sites in all these regions, it is evident that the Great Indus Civilization was preceded by a period when people throughout this region not only made pottery on a wheel, which, though not so fine as that of the Indus, was quite good and fairly varied. Comparatively thin, some of it was decorated with incised designs painted in black and white. These people lived in brick-built houses which though smaller than those of the Indus, were protected by a wall (Kalibangan). Not much is known about their metallurgical equipment. Objects such as tools and weapons, fish-hooks of copper-bronze, etc., were probably used, but, surprisingly, neither in Sind nor in north Rajasthan there is any evidence of long chert blades like those found at Rohri and Sukkur. They had to be content with the easily available agate and chalcedony, though in NWFP chert and flint were used. The ornaments—beads for necklaces—were made from the same material, but steatite and faience seem to be unknown. Nothing is yet known about their religion except the painting of a horned bull deity on a bulbous pot. This has been derived from Hissar (Iran), and since it occurs at two sites in NWFP in deposits of this period, the worship of a horned deity seems to have been widespread. Most probably it was this deity which was later completely humanized and worshipped by the Harappans. What appears to be a remarkable achievement of these people is their knowledge of ploughing, exactly as it is practised today in Rajasthan and many parts of India.

The most interesting feature of this pre-Harappan culture as known so far from Kot Diji and Kalibangan is that many of its painted designs and fabrics show a close similarity with those from north Baluchistan and east Iran. Thus there is litte doubt about the direction from which the inspiration might have come to them. And when we recall that this early Irani influence had spread not at one or two sites in Sind and north Rajasthan, but

practically over the whole of Sind, Punjab and north Rajasthan, then we can safely conclude that at some time there must have been a close cultural exchange between the Aryans and the Iranians.

The Harappan Culture

Bearing this in mind, we may now turn to the subsequent development. As yet the origin of the Indus or Harappan civilization is not known. At several places, like Amri and Kot Diji in Sind, Kalibangan in north Rajasthan and some sites in the Punjab and NWFP, it is definitely known to have succeeded the pre-Harappan. If the Kot Diji and Gumla (NWFP) evidence is to be believed, then the Harappan seems to have destroyed the earlier settlement. However, at Amri and Kalibangan the takeover was peaceful, but the change was complete.

The settlements, which were small towns, were each surrounded by a fortification-wall which also encircled the lower towns, so that at Kalibangan, for instance, we have two parallelogrammatic settlements: a citadel near the river and a lower town. And this seems to have been the characteristic feature of Harappan town-construction, as seen in not only their largest towns like Harappa and Mohenjodaro, but also in the smaller ones like Lothal in Gujarat and Surkotada in Kutch.

It is no use speculating as to how, when and from where the Harappans developed this feature. Since no earlier stages of this development can be seen anywhere in India or Pakistan (though it is most probable that they lie buried under Mohenjodaro and Harappa), scholars have naturally turned to western Asia. Here, Ur, a city in southern Iraq, has been cited as a probable model for the town-planning in the Indus plains. This hypothesis may have some substance for, as said earlier, evidence found in the former includes not only very early domestication of animals and traces of individual houses but also definite proofs of a centralised planning and administration. In western Asia this sense of organisation is primarily felt in the construction of *ziggurats* (or temples), in the collection of grains and their distribution,[1] in the control of the guilds of artists and craftsmen and, to a lesser extent, in well-planned cities, such as we witness in the Indus

[1]These grains were raised probably with the help of canal irrigation.

plains. Still, one cannot deny the earlier existence of these features which go to make up a civilization. And the Indus Civilization is nothing if not a model of perfect organization. Since no written evidence of the source and nature of this organisation is hither to available, one has to infer it from the archaeological remains. And here one is surprised by the uniform and constant occurrence of certain major and minor features.

Among the major features are:

1. Towns or cities laid out parallelogrammatically, and divided into wards like a chess-board, by north-south and east-west arterial roads, and smaller lanes.
2. Usually, there was an 'acropolis' or a town where the houses were built on platforms, and the entire complex surrounded by a fortification-wall, with corner bastions. This—acropolis —stands above a 'lower town,' also protected by a surrounding wall.
3. The arterial roads were perfectly aligned and provided with covered drains having additional soak-pits made of pots and placed at convenient intervals.
4. The houses were constructed with kiln-made bricks or *kuccha* bricks, though the bath-rooms and drains were invariably built with *pukka* bricks made water-proof by using gypsum.
5. A brick-made well was provided in each house or a set of houses.
6. Each house had its own sanitary system, and in larger towns like Lothal, Kalibangan and Mohenjodaro, terracotta pipes with faucets were also employed for supplying water.
7. The dead were buried, as far as known from Harappa and Lothal, in a separate cemetery, usually in a rectangular or oval grave, at times lined with bricks, the body laid in an extended position with the head towards the north, and grave goods consisting of pots and personal ornaments. However, exceptions have been found at Lothal with two bodies in one grave (regarded as *Sati* burial of husband and wife, *for which there is no evidence*) and at Kalibangan where in one grave there were superimposed burials; the lower contained only pottery, without skeletal remains. Two other types, recorded for the first time at Kalibangan, contained urn pots including platters and *dishes-on-stand*, other personal objects, but no

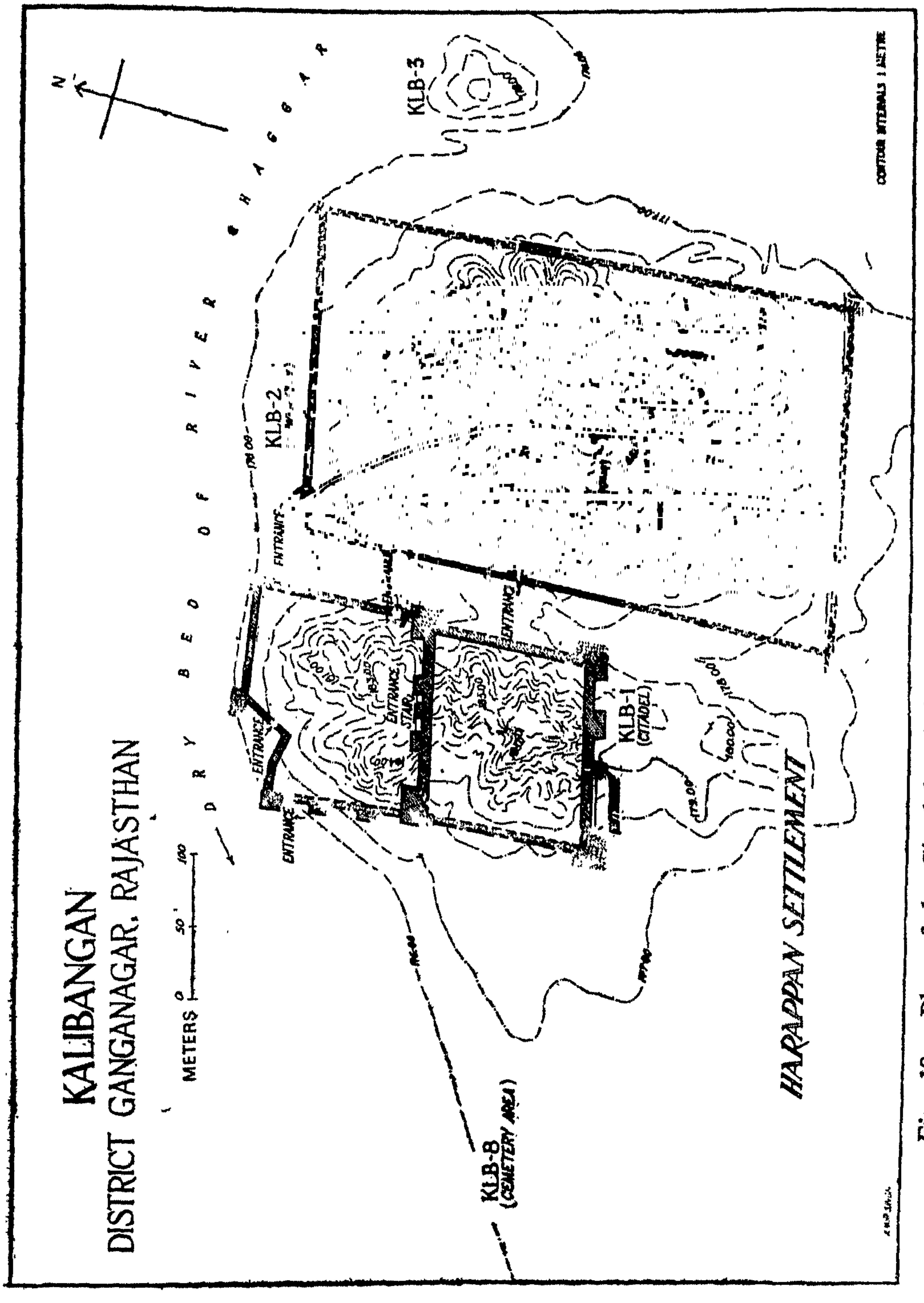

Fig. 19. Plan of the Citadel and the Lower Town at Kalibangan, Rajasthan.

skeletal remains. These graves seem to show two stages of filling. A fuller study of these three types of graves might reveal some sociological difference among the Harappan population.

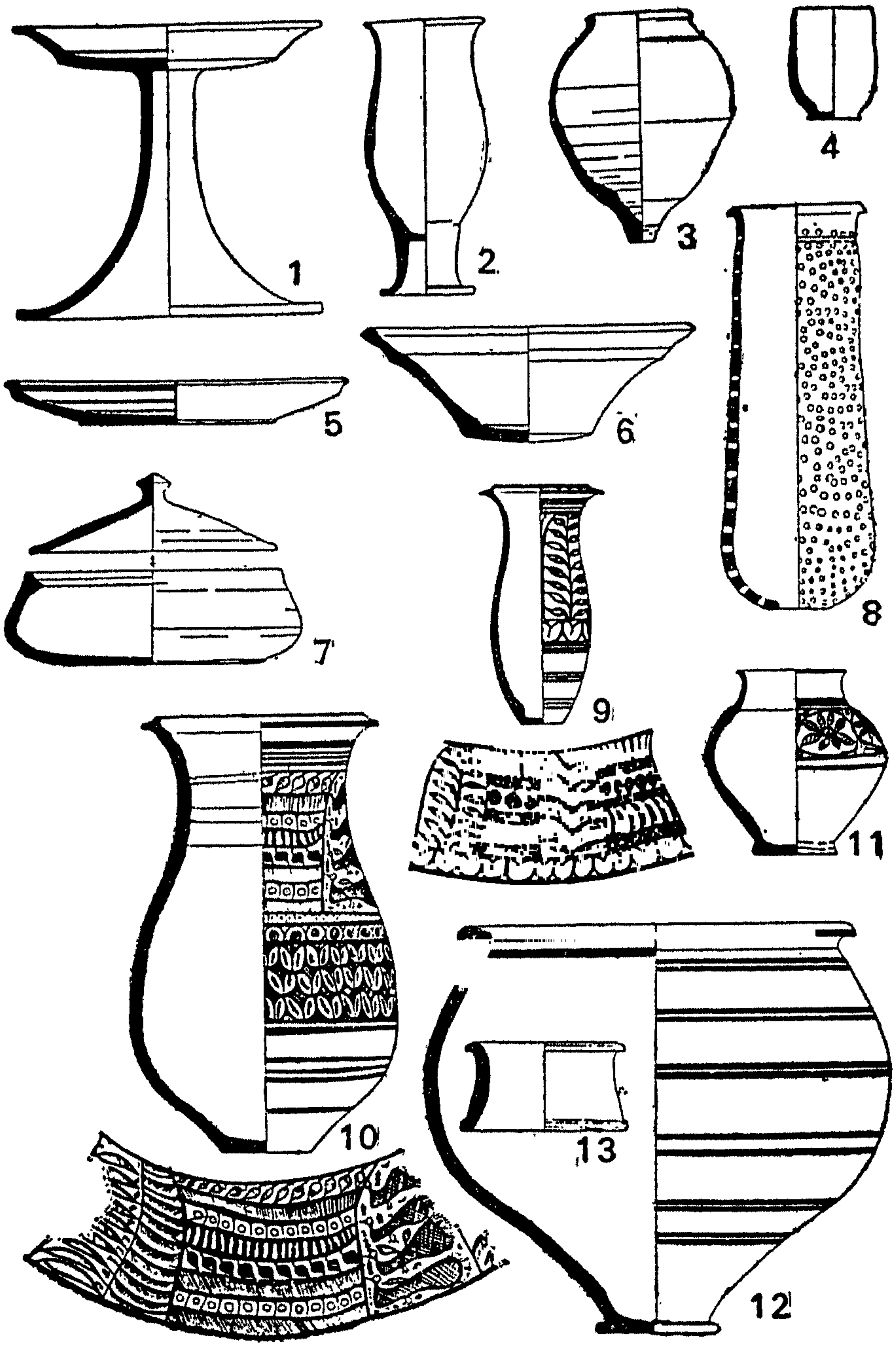

Fig. 20. Harappan pottery.

The minor features which draw our attention are:

1. Extremely well baked pottery, made of perfectly levigated clay, so that even a potsherd with 2.5 cm. thick wall and about a metre high and more than half a metre in girth gives a metallic sound when struck.
2. Certain other kinds of pottery such as perforated jars, goblets, large and small dishes, and storage jars.
3. Steatite copper seals, bearing beautifully engraved animals and pictographic script.
4. Necklaces made of etched carnelian beads, and segmented faience beads.
5. Gold ornaments.
6. Tools, weapons and vessels of copper/bronze, whenever they occur.

When one thinks of the vast area in which these things occur, from the Makran coast in the west to the Simla foot-hills and Delhi in the east, and from Peshawar and beyond in the north to Surat in the south—one realizes how many architects and engineers, masons and carpenters, potters, artists and craftsmen, etc., must have been needed to produce this 'cultural' empire. And an 'empire' it was, much more efficiently organized than the Mauryan (Asokan), Gupta, Mughal or British ones, since in none of these latter we notice such uniform and constant availability of creature-comforts as is known to have been provided by the Indus or Harappan cultures.

Unfortunately, what the exact nature of this organization was, is still not known—that is, whether it was a highly centralized rule by a king or a succession of kings, or it had a democratic form of government as we are having today in India. Most probably, it was ruled by a succession of kings who were priest-kings as in Egypt.

What is certain is that this rule lasted for centuries, according to one calculation for at least eight to ten centuries (2500 BC-1500 BC) and according to another, for about six centuries (2350 BC-1700 BC). As any efficient administration of such a vast territory could not have been possible without adequate resources, there must have been enough grains for all people and enough raw material for various arts and crafts and building techniques. There must also have been extensive inland and foreign trade, so that what was not available locally—such as copper, gold, lapis

lazuli, etc.—could be imported from elsewhere. It is also now reasonably established that this trade might have been overland as well as maritime. The latter is proved by the occurrence of small terracotta boats, and, above all, by the vast brick-built dock at Lothal.[1] As there is no evidence of coins, barter must have been the normal method of exchange for goods of various kinds. But the system of weights and measures was excellent. For weighing goods—small as well as large—perfectly made cubes of agate were employed. For measuring length, strips of shell, unshrinkable in heat and cold were used. Such exquisite planning of towns and cities covering a radius of more than 1600 kilometres has not been witnessed in any of the civilizations of the period.

It is, indeed a pity that we are still unable to read the pictographic seals and small inscriptions scratched or painted on pots. The term 'prehistoric' which we apply to this extensive and highly developed civilization may be justified from the point of view of its period, but we must not forget that the people of this civilization knew writing, used weights and measures, constructed monumental buildings and docks, and had a highly organized administration. Two of their cultural traits we know of are the ritual bath and the worship of the bull, a mother-goddess and probably the linga. To this may be added the fire altars from Lothal and Kalibangan. Thus, unlike other ancient countries, we in contemporary India have maintained links with the Indus as also the Vedic cultures. Since the Indus civilization is the continuing source of much of our present social and religious practices, I have regarded it as 'protohistoric.'

Just as we do not know how this wonderful civilization originated, spread practically over the whole of western and northwestern India and lasted at least for 600 years, we do not know exactly how it perished. It now seems that there were several causes for its disappearance. And these differed from region to region. Thus in the NWFP it might have been due to invasions; in the Punjab, destruction might have been due to partly natural causes—such as salinity caused by sub-soil water (as today),

[1]It has been argued that the structure could be a fresh-water tank. The difficulties in accepting this interpretation, I have discussed at length in the revised edition of my book *Prehistory and Protohistory of India and Pakistan.*

deforestation, and foreign invasions (Aryan?); in Sind, it might have been due to some of the above reasons as well as due to a gradual desiccation or a sudden subsistence or uplift of the land which submerged parts of Mohenjodaro in masses of river silt; in Makran and Baluchistan, due to desiccation, foreign invasions, as well as the uplift of the coast, which made ports like Suktagendor inoperative; in Saurashtra, Gujarat, due to repeated flooding of low-lying coastal sites like Lothal. In NWFP,

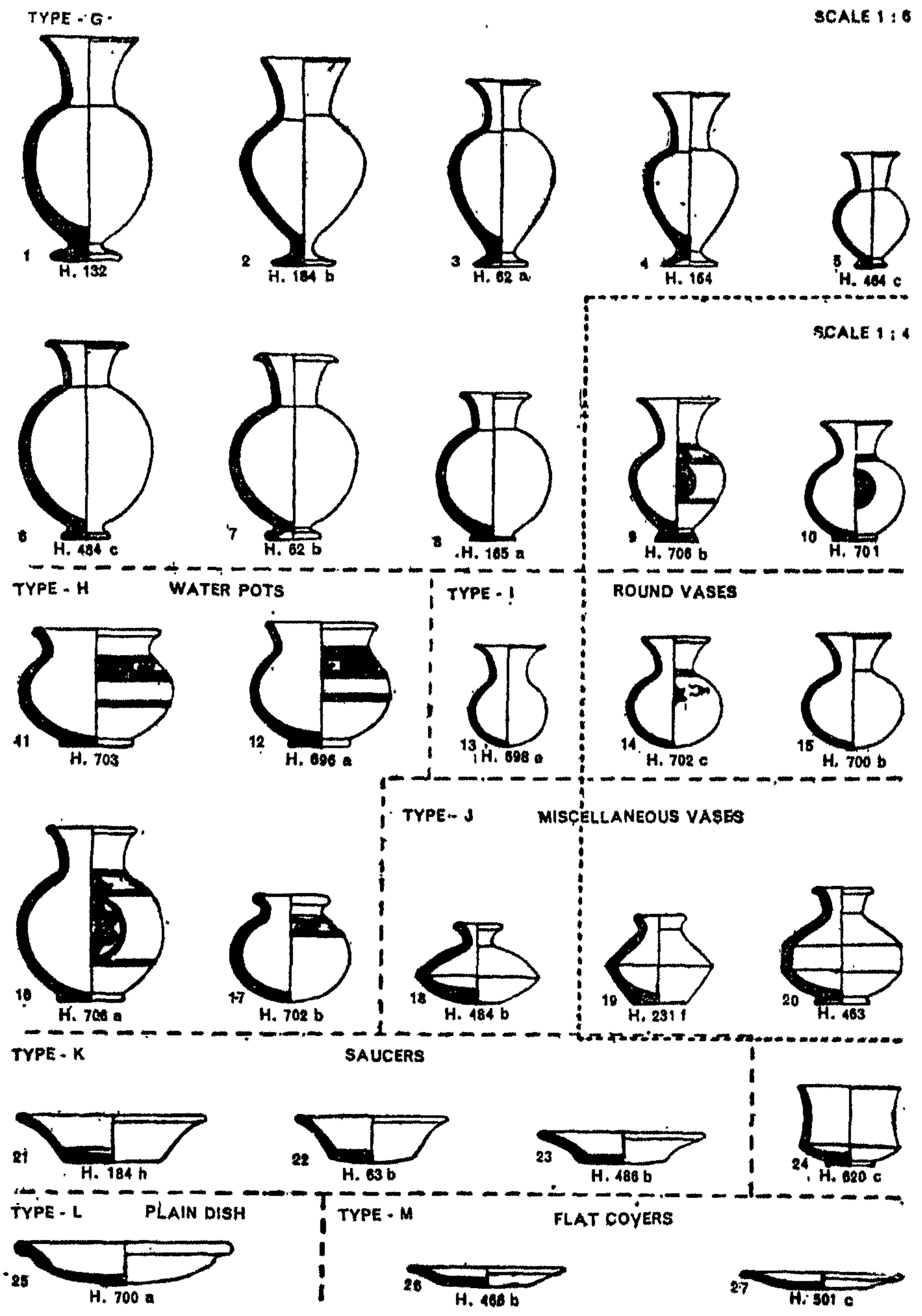

Fig. 21. Pottery belonging to Cemetery-H Culture.

at least two-sites—Gumla and Hathala—show graves of a later culture. So also at Harappa, where a pottery distinctive both in design and shapes was found in Cemetery-H. According to recent reports, many sites with such a pottery have been found in the Punjab. Thus the designation Cemetery-H Culture seems to be justified, though nothing more is known about it.

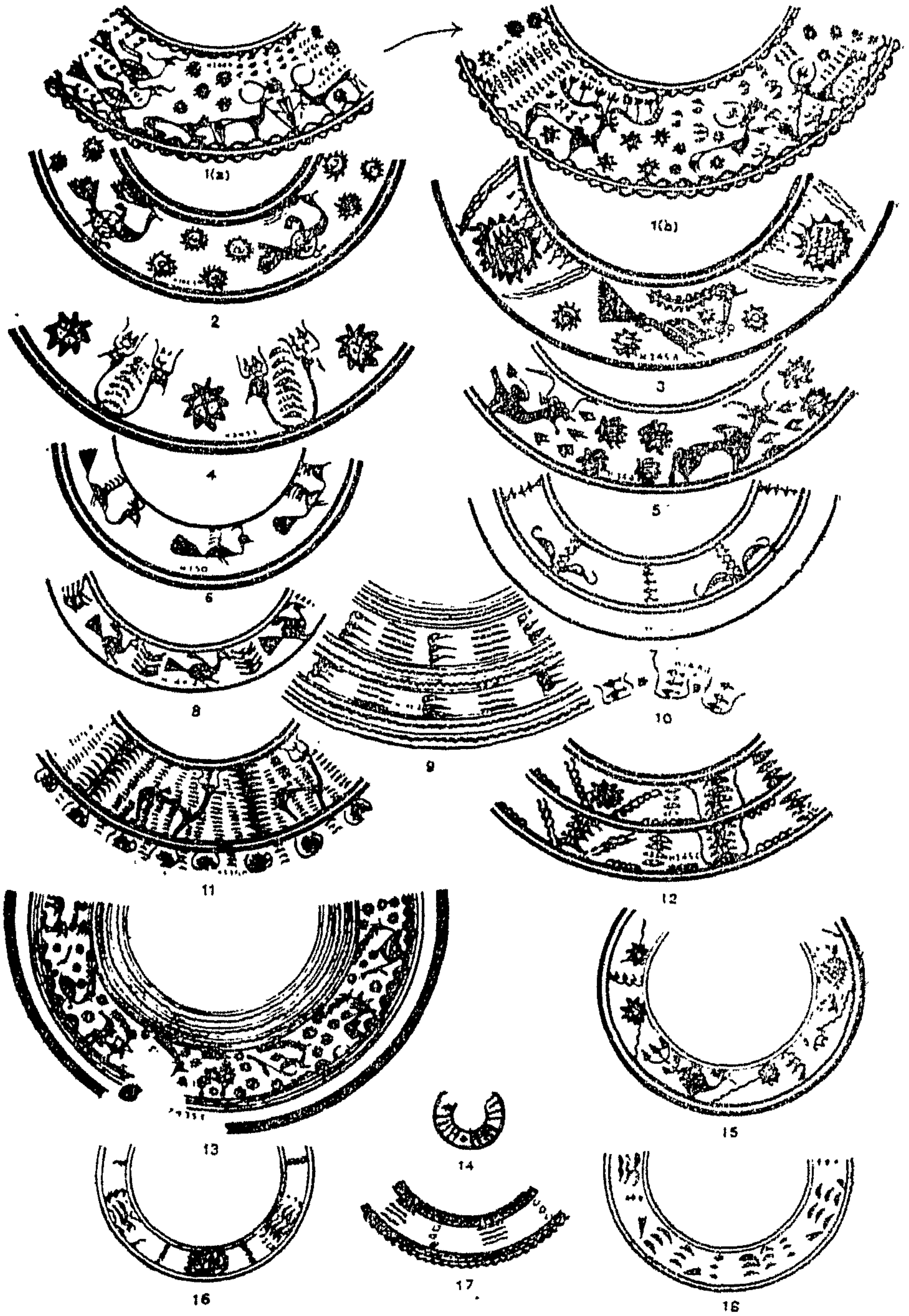

Fig. 22. Cemetery-H Distinctive Designs

As yet we do not know what actually happened after this civilization in Sind and Punjab disappeared. Several regional cultures must have and did come into existence as seen at Chanhudaro (Sind). But in Saurashtra, as shown by several small sites, and by the excavations at Rangpur and Somnath (Prabhas Patan), the existing culture changed into a new one, which in many respects was inferior to the Indus. And this is worth noting.

With the main inspiration gone, the first to disappear were literacy (the pictographic seals with writing), town planning, (though it must be conceded that nowhere have we excavated a site large enough to be able to make such a statement), the art of making faience and etched carnelian beads, the long chert blades from Sukkur and Rohri, and gold ornaments. The Indus tradition is seen to have persisted for a considerably long time in Sind, Punjab and Saurashtra only in pottery, though even here all the rich and varied Harappan forms and fabrics are not seen. In short, in every walk of life there was a sudden fall or deterioration as far as the material evidence goes. The absence of chess-board-like town planning with modern sanitation and literacy persisted for nearly a thousand years. To judge from the current evidence, India was once again turned into a country of villages and small towns, where writing and reading seem to have been unknown. And this indeed, is very puzzling, since this long period from about 2000 or 1700 BC to 1000 or 700 BC was certainly the one when, according to a great majority of scholars, the Vedic culture or civilization had spread in the whole of northern and eastern India, up to the Nepal and Bengal border, and in the south up to Nagpur, and in the south-west up to Saurashtra, leaving out probably Andhra, Karnataka, Tamil Nadu and Kerala.

It would seem from our point of view that these cultures might have been Aryan, the people speaking Sanskrit and Prakrit. And if these cultures are regarded as Aryan, one will naturally be tempted to ask: how, then, are to be identified the traces of cultures which existed before the Aryans came or spread to these regions? Or, are these not the remains of pre-Aryan or non-Aryan cultures or the indigenous people of India?

These are a few interesting and serious problems which archaeology, with the help of ethnography and linguistics, might

be able to solve to some extent. In fact, an attempt in this direction should have been made long ago. What has so far been accomplished is not much, and is hardly 20 years old! Secondly, little work has been done in areas which are the present day habitat of the preliterate tribes or indigenous people of India, with the result that we are not so confident in asserting the identity of what has been dug up by archaeologists—that is, whether it is Aryan or non-Aryan or tribal. Under the circumstances, what we can do is to sketch the essential features of the life of the people as gathered from the small excavations during the last twenty-five years (1947-1972). According to our present knowledge this would roughly cover the period between 2500 BC and 500 BC.

Judging by our present knowledge, this long period of 2000 years may be characterized as one of small, perhaps independent pastoral-cum-peasant cultures located or developed in small and large river valleys of the Indus and the Ganga-Yamuna, as well as along other rivers of peninsular India. This may also be characterized as a period of 'colonization,' the term being used in a good sense and meaning not exploitation of the weak by the strong and developed countries, but development of new, virgin lands by men slightly better placed in life, with the help and co-operation of the indigenous people.

These riverine cultures (as well as the castellated hill cultures in the Andhra-Karnataka region and Tamil Nadu) can at present be distinguished solely by their distinctive pottery; to a lesser extent, by the methods they followed for disposing of the dead; to a still smaller extent, by their tools or weapons of stone, bone, and occasionally of copper; and lastly, if at all, by their house types. Evidence obtained so far is inadequate and whatever that is available has not been so well studied as to permit us to say anything positively about their subsistence pattern (e.g. what people ate or how exactly they obtained their food), or the size of their families, or the villages they lived in. And thus little can be said at present about their social organization, settlement pattern and administration. While pottery does help us to distinguish one regional culture from another, it does not tell us who their makers or users were. At best a few inferences may be made about the likely origin of each distinctive kind of pottery and its distribution, enabling us to demonstrate the

probable limits or extent of the culture. An examination of the nature and type of the pottery may also give us some idea about the technological skill of the potter or the life-ways of people using that pottery.

Ahar or the Banas Culture

Leaving out for the moment the various Baluchi, pre-Harappan and Harappan civilizations, the following groups of cultures may be distinguished with the help of pottery.

The first to be mentioned is the Ahar or Banas Culture which, almost contemporary with the Harappan Civilization in northern Rajasthan and Gujarat (Saurashtra), flourished in south-east Rajasthan. Its principal site, Ahar (or Ahad), is a small suburb of Udaipur, though there are other sites situated on the banks of the Banas and its tributaries.

The Ahar Culture very well illustrates how the early settlers or colonizers made the most of the local situation and the available raw material. For security, a hill-girt valley was chosen, where again there is a fairly good and regular amount of rainfall, so that water for drinking and irrigation or cultivation may be easily had all the year round. Again, this region offered excellent facilities for hunting and had an abundance of carnivorous animals as well as deer and boar. Added to this was the attraction of finding copper ore in some of the oldest rock formations in India.

For building houses, there was schist, which could be broken easily and turned into the required size of slabs. Any amount of quartz nodules was also available for strengthening and beautifying the walls of the mud houses.

These rare natural advantages have given a character to the Ahar Culture which is quite different from the Harappan as well as the contemporary Chalcolithic cultures.

Our large excavations as well as the previous ones by Dr. R.C. Agrawal show that the plinth of the houses at Ahar, from the earliest times, was built with roughly dressed slabes of schist, a rock which, as already said, is abundantly available locally. The walls were made with mud or mud-bricks. Timber was used—though sparingly—for the central upright pillars, and probably also for the long, horizontal beams of the roof which had a sloping position and was thatched with bamboos, and additionally

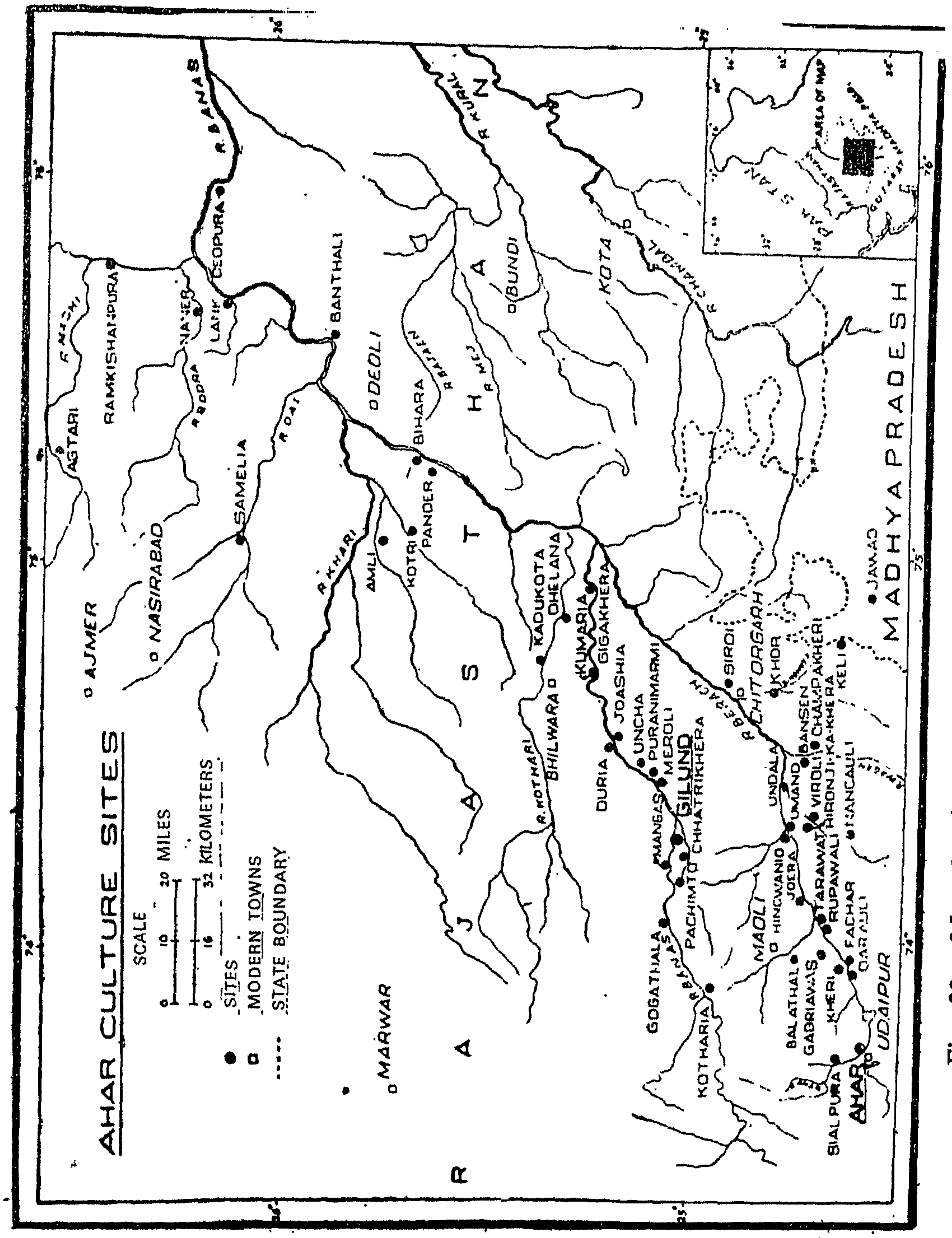

Fig. 23. Map showing the distribution of Ahar Culture sites in Rajasthan.

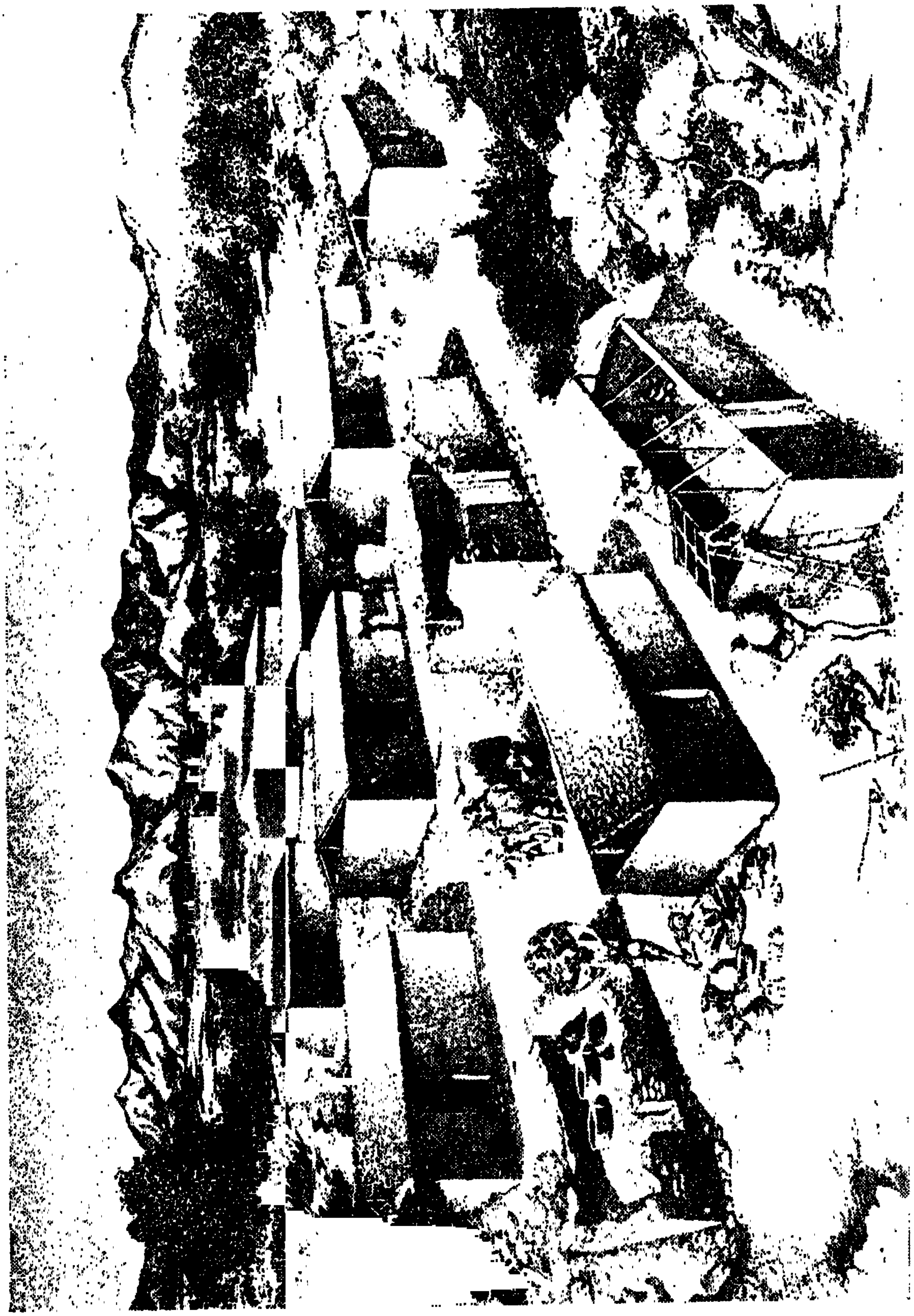

Fig. 24. Copper Age City of Ahar (Tambavati), reconstructed from the ground plan as exposed in the 1961-62 excavations.

covered with grass and leaves, but not tiles.

These stone-and-mud walled houses with sloping roofs were fairly large, the largest so far exposed having a length of 10 metres (the width is unknown). Other smaller houses have a range between 6.7×5.2 metres and 3×2.7 metres. Large houses had partition walls of mud. The houses, though repeatedly raised over the debris of the older ones, seem to conform to one principle, *viz.* that their longer axis was north-south, and the shorter east-west. The floors of the houses were made in two ways; by mixing clay with river gravel and by using hard burnt clay (possibly from earlier structures). These houses were simply furnished. In the kitchen, or in one part of the room, there was a large *chulah*, with two or more mouths.. The arms and sides of this *chulah* were straight and high, and inside it there were small knobs or protuberances to support smaller vessels. The surface of these *chulah*s were plastered in such a way that the impression of the palm and fingers could be clearly seen on them. (In fact, some of these impressions are so distinct that they can be "read" by a palmist). In one house a row of *chulah*s was found, possibly belonging to a large family or serving some communal purposes. It is, however, doubtful that these *chulah*s could be used for smelting copper or such industrial purposes.

More frequent than *chulah*s were saddle querns—a large number of them in varying sizes, the largest being 1.2×0.9 metres—found all over the mound at all levels. Their usual place, as even today in any Indian home, was in the kitchen, near the *chulah*. These querns are made of quartzite and occasionally of sandstone and other rocks. Though this stone is easily available, we find that the querns were used almost to the last, until the gradually increasing concavity became a hole. In some cases, two or more sides of the same quern are found to have been used. Though no loose grains—charred or otherwise—have been discovered from the excavated Phases Ia and Ib, some cereals like wheat or millet must have been ground. These must have been made into flour and then converted into leavened or unleavened bread by roasting on baking pans, numerous fragments of which were found. It appears that while making pottery, *Jwari* (a kind of millet) was used in Phase Ic, grains of which were found mixed with clay. However, the top levels of this phase have been much disturbed and since potsherds containing grains or impressions

of this kind invariably occur in such deposits, it is now held that millet was eaten by the inhabitants of Period II. In the beginning, flattish stones were used for grinding; later, these became plano-convex; and in the early historical period, quite cylindrical. Such cylindrical types have continued till today.

Though we are not quite certain about millet, rice definitely formed part of the daily dish of the prehistoric Aharians. And this rice, according to Dr. Vishnu-Mittre, was of the long-seeded strain, perhaps an earlier variety of the famous sweet-smelling Dehradun rice. Abundant impressions of these on potsherds have been found from Phase A, Period I.

However, rice is not usually ground before it is eaten, though its husk may be removed by pounding. This may explain the repeated occurrences of querns, though some other grain—probably wheat—must have been known and eaten. Wheat was known to the Harappans and to the people of Kayatha and Navdatoli in Malwa. Thus it is more than probable that the Aharians ate wheat. What other cereals they had, we have no means to ascertain.

To some extent, the Aharians were also non-vegetarians. Among the kitchen-middens from their houses bones of animals have been found. These have been carefully identified by Dr. (Mrs.) Shah. On the basis of this study we can say that fish, turtles, fowl, cow, buffalo, goat, sheep, deer and pig were eaten. Of these those of *bos*, domesticated cow/ox, predominate. This is also the case elsewhere and suggests that these animals formed a definite item of food in all these early agricultural communities.

There does not seem to be any other 'furniture' in the house except pottery, though it is possible that small wooden tables were used for keeping dishes—particularly dishes-on-stand. If wooden things were there, these would naturally perish in the Indian climate. This may also be inferred from the very great mass of pottery found in the excavations and from the fact that in the three instances, three copper axes, a copper sheet and five beads were found kept in earthen pots.

However, at Ahar, more than anywhere else, many of the pots, particularly large storage jars, were kept embedded in the floor. Earlier excavations had exposed four grain-bins and other smaller vessels kept in this way, whereas we noticed medium-sized vessels embedded in the floor in Tr. A. Such a practice was quite wide-

spread are not confined to one or two houses. For this alone explains the thin, coarse, rusticated lower portion of numerous vessels and finely burnished and decorated shoulder and neck, making the pots top heavy and almost immovable.

Next to copper objects, pottery was their true wealth. The terracotta figures, human as well as animal, are few, so also ornaments including beads of semi-precious stones and faience. Three toy wheels attest the use of cart.

The Aharians possessed some seven kinds of pottery. Of these, one kind—the black-and-red—was specially reserved for eating and drinking. Another table ware, in red, having a smooth, sometimes lustrous, surface in various shades of red, tan, chocolate and orange, is also found. Made of well-levigated clay, thin or thick, it has a metallic ring. Besides bowls, small globular vessels and *lotas*, its most distinctive type is the stepped dish-on-stand. Its particular form and even the fabric are believed to have been borrowed from the Harappan.

Both these wares are beautiful to look at. But no less attractive are the storage jars in thick Red-slipped and grey wares with their graceful oval outlines, smooth, ornamented top and coarse, rusticated lower portions. Here is a perfect combination of beauty and utility—a trait, be it noted, which charaterizes Rajasthani art, architecture and dress.

The Ahar potter, in fact, hase dmonstrated how a pottery—even utilitarian, like storage jars—can be made beautiful without painting. Also remarkable is his sense of proportion and self-restraint. The storage jars are finely decorated with cut, appliqüe and incised ornaments; still the latter are confined to the shoulder only. The lower portions, which were buried in the ground, are left not only severely plain but made intentionally thin and rusticated. Likewise, highly burnished red or grey ware vessels were very rarely decorated, or, if decorated, had thinly incised lines.

The other three wares are in very small quantities and are restricted to certain phases only. These very features help us in postulating contacts of Ahar Culture with others.

These other wares consist of a few sherds of a buff and cream slipped ware. The shapes—small bowls and globular vessels—are not so much important as the fact that these are made of pure kaolin or kaolin mixed with local clay.

In the black-and-red ware, the most common are various types of bowls, *lotas* (small elongated globular vessels) and small jars with a coarse surface. The bowls might have been primarily used for eating and drinking, whereas the *lotas* and small jars could serve the purposes of storing milk and offering water. However, the major group of pottery at Ahar was the red ware, having no less than eight sub-groups, of which one, with a fine red metallic surface, was again a table ware, meant for eating and drinking. In its range, it not only vies with but even surpasses the distinctive black-and-red ware. That range includes bowls with graceful outline and finish, exquisite dish-on-stand, soft-surfaced *lotas* and vessels with delicate ribs. The stepped dish having a bulbous stem and a broad concave base, through which a bowl-like shape emerges, might well be a chandelier, if not a simple technical device. When intact, it must have been the pride of the kitchen-cum-dining hall. There were several, of these, as the numerous stems indicate. Such dishes-on-stand imply a smooth, even floor and possibly wooden tables on which they were placed as offering stands or fruit dishes. If so, were there corresponding stools or chair-like seats on which a member of the family or the priest sat?

Our modern habit suggests thoughts like these, for in an orthodox Hindu household, while the members do sit on low wooden seats, the dishes are normally kept on the floor. Rich Jains do, however, place the dishes on equally low or high wooden supports called *patlas*.

Some other groups in the red ware, of a large size and having an exterior decoration, are no less remarkable. This group, as the grey ware one, contains types which are intentionally rusticated from the outside, particularly from the lower half. An explanation of this may be had in the fact that all such vessels were kept half-buried in the floor or arranged on a raised shelf in the kitchen or the store room. In the kitchen, such a shelf, where water is stored, is called *paniyaru* in Gujarati.

What is the significance of all this rich and profuse pottery—the red ware, grey ware and black-and-red ware? Could the red ware alone have supplied all the daily, as well as special, needs of the Aharians? Why were then the two principal wares made? Do they represent some ethnic groups?

While the present evidence is insufficient to warrant any further speculations, the few painted types and fabrics do show Ahar's contact with the contemporary cultures in Saurashtra, central India, and the Deccan towards the closing phase of the Ahar Culture. And it has now been conclusively proved that the Ahar Culture had reached Kayatha on the Kali-Sind, not only with its pottery but with the unique bull cult, of which Ahar itself has given only one specimen. The Ahar Culture had also spread into other parts of western Malwa, the easternmost limit being Maheshwar-Navdatoli on the Narmada. Here, its black-and-red ware forms a small group, among other local groups, but at Kayatha it disappears subsequently, probably because the original impact from Rajasthan lost its force.

Next to pottery, the most important aspect of the Ahar Culture is the knowledge that the people relied solely on copper tools and weapons, and that these were made from copper ore smelted from deposits in the Aravallis. Though so far only four or five copper axes, one knife blade, a copper sheet, a bangle and two rings have been found, the occurrence of copper slag and its scientific examination by Dr. Hegde[1] tells us that the Aharians smelted copper, but were not expert casters. Their moulds were probably earthy or of sand through which the air could not pass. After pouring the metal in such moulds, the axes were allowed to cool slowly. So a cellular structure developed within the metal, and the impurities got concentrated around the cellular grain boundaries. Even after removal from the mould, the axes were not subjected to work-hardening.

This conclusion has an important bearing not only on the copper technology at Ahar, but it points to the fact that there were other independent and more advanced smelters and casters in Madhya Pradesh, Maharashtra and Saurashtra where, though the source of the copper ore is not known, the objects were much better made.

The Ahar axes, though thinner and with a more flaring edge, are not otherwise different from the flat, socketless axes used all over India.

It is interesting and very significant that Ahar is the only site

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where at this period long or short lithic blades were not used, along with copper and sometimes along with the earlier stone axes, for household purposes. Hence the Ahar Culture has been justifiably called the Copper Age Culture, which explains the traditional name of the site, 'Tambavati,' meaning literally a copper making or smelting city or a city having copper.

This feature is all the more remarkable because along the flanks of the Aravallis and within a few kilometres of Udaipur, at Bagor, District Bhilwara, sand dunes have revealed a rich microlithic site. Though this mesolithic or microlithic site had a much earlier beginning (*c.* 4,500 BC), it was flourishing when Ahar was first founded, in about 2,000 BC. However, to judge from the objects found at these places, both Ahar and Bagor were completely ignorant of each other's existence. This is, indeed, a very important conclusion, which should be confirmed by excavations at a few other sites of the Ahar or Banas Culture. It is not improbable that just as at Gilund, another partly excavated site on the Banas, the houses were made of burnt bricks (and not stone, because this is not readily available), so also at Gilund and 50 other sites in the Banas Valley, if copper ore was not easily procurable, the inhabitants might have continued to employ blades of agate, chalcedony, jasper and chert, as did the white painted black-and-red ware people at Kayatha. If this point of view is established, we shall have to distinguish between Ahar Culture relying solely on copper and Ahar Culture relying partly on copper and partly on lithic blades.

The one common trait which binds both these cultures is the distinctive pottery—red, grey and black-and-red with paintings in white.

We might also associate another trait, viz. terracotta beads, with incised geometrical and animal patterns, found so far at Ahar and Gilund, Both these give an individuality to the Ahar Culture. But the question remains: Is this peculiar culture indigenous to the Banas Valley?

No positive answer can be supplied by the evidence which is little, though tantalizing.

The Bhils still form a majority among the indigenous people who today inhabit south-eastern Rajasthan. Some of them live near the Dhulkot mound at Ahar and their house plans are exactly like those evidenced in the 4,000 year-old habitation.

But in other respects, such as pottery, ornaments, tools and weapons, as the study of Dr. (Miss) Malati Nagar showed, there was no correspondence between the life-ways of the Bhils and those revealed in our excavations notwithstanding the affinity that exists in our times. That affinity relates also to the fine tie-and-dye pattern in black on the white saris of Bhil women which seems to be an exact copy of the white pattern on the black-and-red ware of the Aharians. Unfortunately, we do not know how the Aharians disposed of the dead—by cremation or by burial. Any evidence of a burial, if found, would provide clues to their physical features and racial types.

It has been pointed out already that there is no relationship between the earlier Bagor and the later Ahar Cultures. Thus the beginnings of the Ahar Culture are unknown. What is certain is that right from the start, the people came with a ready-made knowledge of copper, fine wheel and mould-made pottery with very distinctive shapes. They also knew how to build houses with plinths of schist slabs. There was little change in house plans, which were built no less than 15 times, until the mound rose to its present height of a little more than 15 metres from the surrounding plains. Some changes in the pottery forms and surface decorations can, however, be seen. But otherwise the Aharians continued in this hill-girt valley for nearly 1,500 years (*c.* 2,000 BC—500 BC), until an iron-using people came and lived on the top of this mound.

Who then were the first Aharians? If outsiders, from where did they come? Here we have just a couple of pointers, and nothing more. First, among their pottery, particularly the Grey Ware, there are animal handles and vessels of peculiar shapes—such as hollow-stemmed bowls with applique and punctured decoration, ribs along the neck and shoulder, marked by grooved and incised patterns as well as a rusticity which recall similar shapes and ornamentation found in certain sites of north-eastern Iran, such as Shah Tepe, Geoy Tepe and Hissar.

Equally intriguing is the close correspondence between the eight incised patterns on the terracotta beads or spindle whorls from Troy or Anatolia in general and the one with an incised pattern on a bead from Ahar and an identical one on a bead from Anau in central Asia. Another bead from Ahar has a punctured stag, which remains unparalled, unless we think of

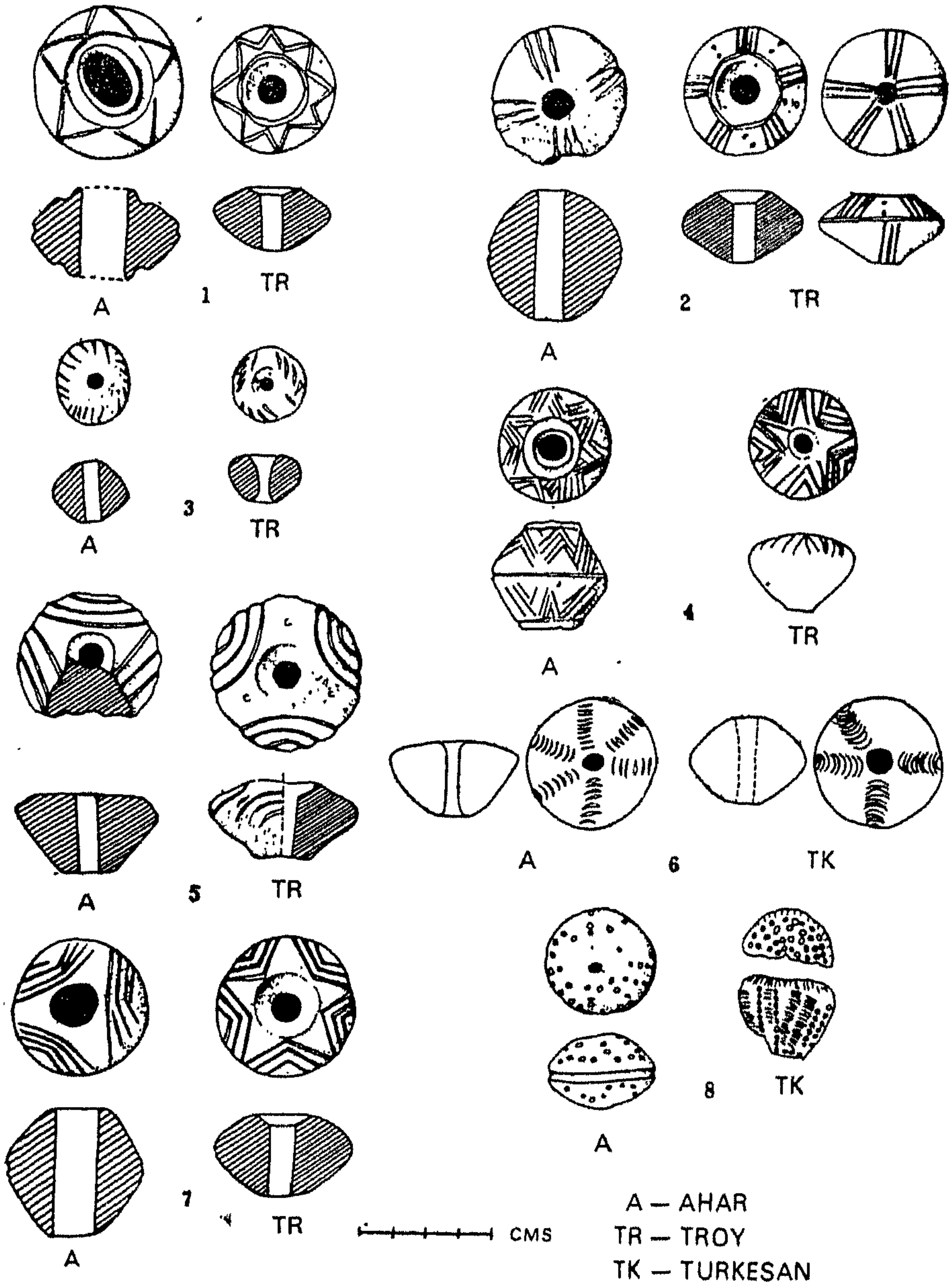

Fig. 25. Terracotta beads spindle whorls with incised decoration from Ahar, compared with those of Troy and Turkestan.

a similar but larger pattern on a grey ware from Tekkalkota. Nearer home, it shows only a very limited acquaintance with the Harappan, viz. in the stepped dish-on-stand in fine red or Sepia ware.

Thus some western Asiatic influence seems to be at work. Whether it was in the form of ideas or was the result of migration, can be revealed only after more extensive work at Ahar and other sites in the Banas Valley has been carried out. What can

be said at this stage is that this influence, whatever its strength may be, was not fully foreign and that it had adapted itself to the local elements and given rise to the distinctive culture in the secluded part of south-east Rajasthan. Since we do not know who the Aharians were, autochthons or foreigners, and since there is no trace of writing among their cultural remains, it is difficult to say whether they were Aryans or non-Aryans or pre-Aryans. Some scholars have tried to identify the Aharians with one of the earlier groups of Aryans, some with one of the Yadava families. But these remain pure speculations.

Malwa Culture

Central India, OR Madhya Pradesh as it is now called, is a vast stretch of land, having its borders with Rajasthan on the west, Uttar Pradesh on the north-east, Orissa on the east, Andhra-Maharashtra on the south and south-east, and Gujarat on the south and south-west.

Linguistically, it is supposed to be one Hindi-speaking area, though this Hindi differs from one sub-region to another. Thus one has Malvi on the west, Bundel Khandi on the east, Nemadi in the south, while the various tribal people who inhabit Bastar and other areas in Mandla District speak Gondi and other non-Aryan or Dravidian dialects.

These major and minor linguistic differences are due to the multi-racial composition of the peoples living in this vast State.

It is but natural that these differences in languages—even dialectical and ethnic composition should be reflected in the cultural remains from the time they began to assume an individuality.

This brief preface is necessary because in 1953, when the first traces of a Chalcolithic Culture were found at Maheshwar and Navdatoli on the Narmada, some 97 kilometres south of Indore, and also at some places between Ujjain and Indore, all these cultural manifestations were grouped under one cultural-geographical name of 'Malwa Culture.'

Kayatha Culture

Recent work at Kayatha near Ujjain has shown that Navdatoli or the Malwa Culture was neither the earliest nor the only Chalcolithic Culture in Malwa, or westren central India. This

culture had been preceded by two earlier cultures, viz. the Kayatha and Ahar, whereas the Malwa Culture was a later development of these two and possibly other unknown cultures.

The differences between the Kayatha, Ahar and the Navdatoli Cultures were not fundamental. They were primarily confined to pottery. Otherwise, as far as the use or knowledge of agriculture, stone and metal technology is concerned, they all relied on long parallel-sided and pen-knife-like blades of chalcedony, with a small percentage of lunates and trapezes. The last-mentioned tool-type always occurs in very small numbers. Hence judging by its earlier use as arrowheads or barbs of harpoon, it is very likely that in the Kayatha, Navdatoli and all the other Chalcolithic Cultures, these tiny chalcedony lunates or trapezes were employed as elements of composite tools or weapons for hunting, fishing or as teeth for sickles. The rest of the tools, of which over 50 to 75 per cent are parallel-sided blades, were employed for household uses such as cutting fruits, vegetables, and sawing small pieces of wood, bone and ivory, or removing hair from the body.

Because of this feature, as evidenced practically all over India and wherever else it is found, this particular culture has been called Chalcolithic, that is pertaining to a time when copper and stone were used together. For the other stone objects—such as boat-shaped stone slabs, known as saddle querns, and round or plano-convex crushers and grinders—have survived till this day, though their original shape and function have undergone a change. At this time these stone objects were primarily used for grinding grain—usually wheat—and at times also for grinding the edges of stone axes in the Deccan. However, none of these entitles the culture to be called Chalcolithic-Neolithic.

In addition to these chalcedony blades and larger stone-tools, the objects of more common occurrence are flat copper/bronze axe, beads and bangles and wristlets or anklets; but smaller or larger vessels and daggers, spears or swords are rare. Even in this repertoire, Kayatha's axes stand out.

Thus, together with the distinctive pottery, we get an individualized culture complex at Kayatha on the banks of the Kali-Sind, a tributary of the Chambal. The period, as shown by several C-14 dates, is about 2000 BC. Both these are significant. It was at this time that the Indus or the Harappan Culture at

Kalibangan and other sites in the valleys of the Sarasvati and Drishadvati had established itself. And these people in their turn might have pushed out the earlier inhabitants, who gradually entered the heart of India, in the valleys of the Bina, Chambal and the Narmada.

This eastward migration might explain the term 'Kali-Sind,' and the presence of a pottery which has some resemblance to the pre-Harappan or Indus Pottery from Amri, Kot Diji and Kalibangan. The most characteristic fabrics and shapes in the Kayatha pottery so far available are (1) globular jars (2) bowls with thickened incurved rims and carinated shoulders, and (3) huge storage jars with heavily beaded rims, recalling the Harappan forms. Interestingly, many of these vessels have a ring base, which pre-supposes the provision of a separate stand.

Different from this sturdy Kayatha ware is the Red Painted Buff Ware. It is an extremely fine fabric, with thin walls, and the painting is usually in red pigment over a buff surface. The painted designs are linear—sets of parallel lines, usually oblique —and loops and festoons. The most common type of vessel in this fabric is the typical *lota,* of which several beautiful specimens have later turned up at Navdatoli.

Besides these two, there is the Kayatha Incised ware. It is a red pottery without slip or wash, but has incised patterns such as zigzags and chevrons, done by a comb-like instrument. Only two forms—bowls and dishes—occur in this fabric. This ware may recall the Pre-Harappan incised ware, but in the latter the incised patterns are very deep, with well-marked ridges, and executed on the interior.

There is also a coarse handmade ware with incised and applique decoration. The shapes include huge jars for storing water and grain, troughs, basins and dough plates.

The Kayatha pottery is different in several ways from the rest of the Malwa and Indian pottery. Particularly, its two copper axes, each having a thick section, are unique, though otherwise they have a sharp convex cutting edge. Plentiful use of copper is also attested to by the discovery of 28 copper bangles, stored in two red painted buff ware pots (15 in one and 13 in another).

That the Kayatha people were rich or 'affluent' is also proved by three large necklaces—two strung respectively with 175 and 160 carnelian and agate beads of bicone and barrel type,

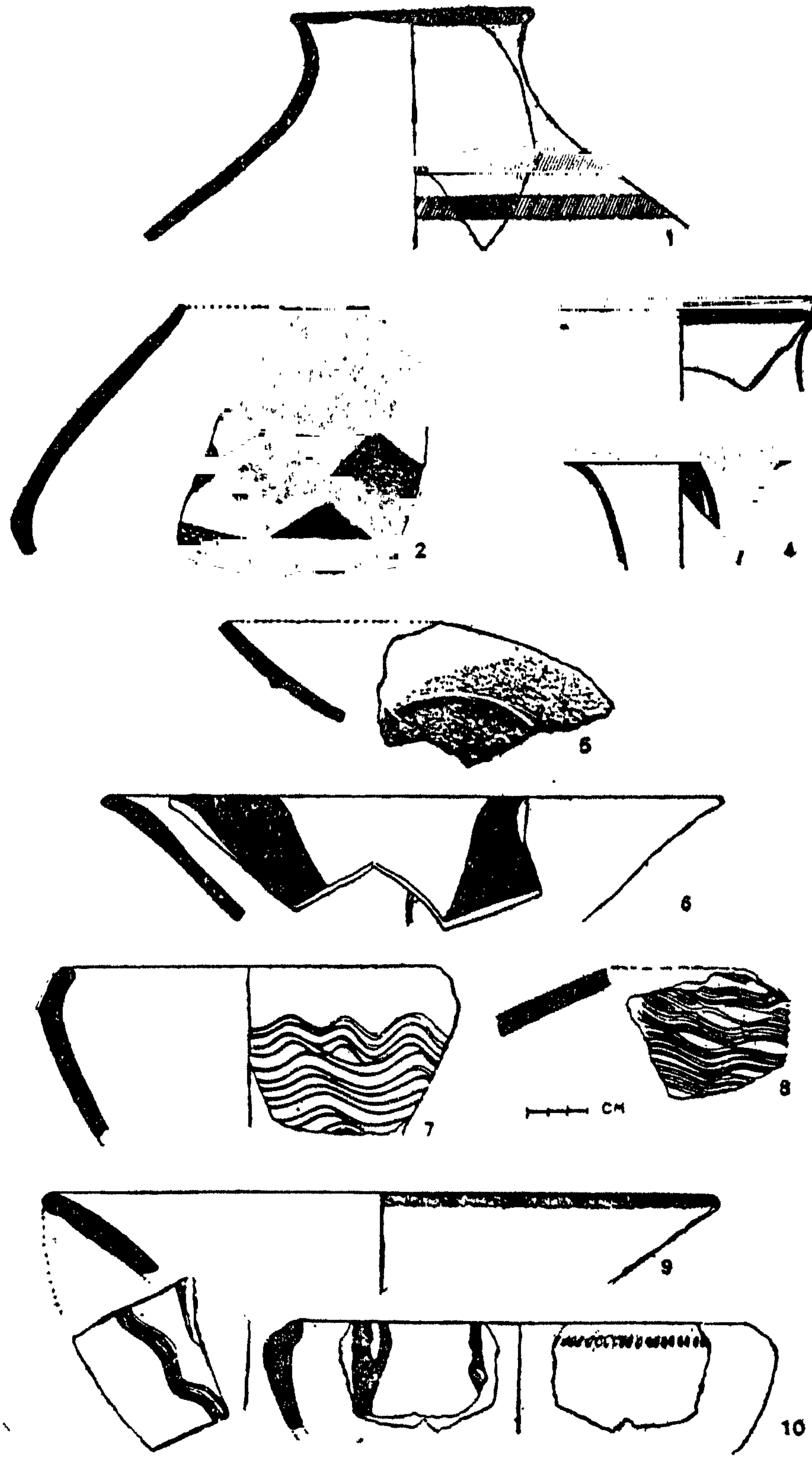

Fig. 26. Red painted buff ware (nos. 1-6) and incised ware (nos. 7-10) excavated from the earliest occupation level at Kayatha.

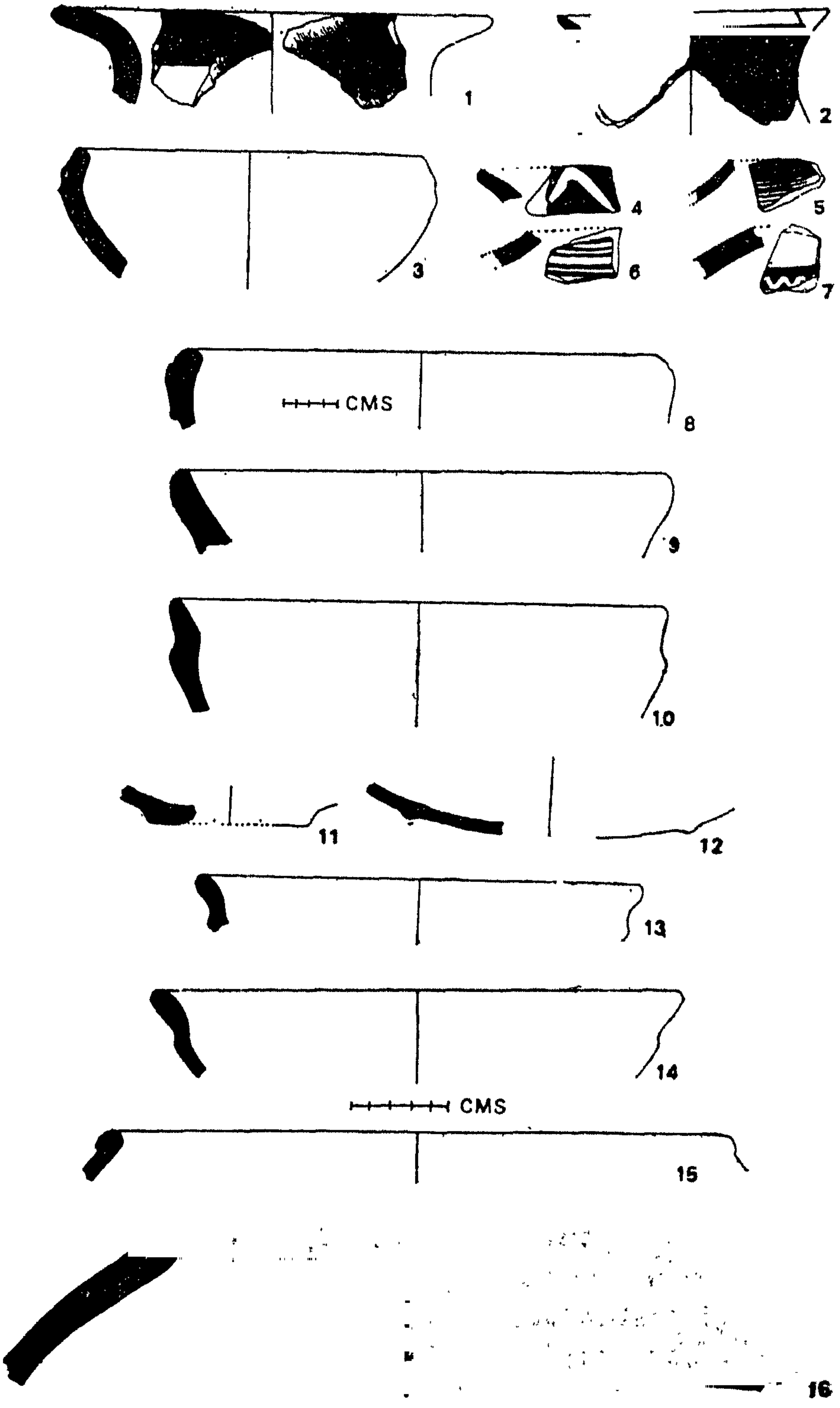

Fig. 27. 'Kayatha Ware' pottery from the earliest occupation level. Kayatha, Madhya Pradesh.

and the third composed of 40,000 microbeads of steatite. These give some idea of the wealth and tastes for personal decoration of these early inhabitants of Malwa. It is interesting to observe that the bangles as well as all the three necklaces, like those found at Mohenjodaro and Harappa, were kept in earthen pots —the first two in two red painted buff ware pots, and the third one in a simple pot—a difference which might signify the value these people attached to the two types of necklaces. Above all, at this early period, these earthen vessels were the *only* safe storing places in the house, there being no other furniture like a cupboard or a safe!

Whether we accept this origin of the Kayatha people or not, in our present knowledge these are the earliest inhabitants of western Madhya Pradesh who show a settled way of life. Though we have no adequate knowledge of their houses, the latter were most likely round, square or rectangular mud-walled huts, with thatched roofs. The walls might have had a cord of split bamboo frame, supported by round, undressed wooden posts. Though the dimensions of these thatched mud huts are not known, from the remains of one or two houses one may say that, for their time, their inhabitants were quite prosperous.

Though bones of cow/ox, goat/sheep, horse, pig, and deer figure among the remains, the occurrence of wheat, fine, plentiful and varied pottery, a hoard of copper/bronze bangles and heavy copper/bronze axes, and necklaces of steatite and carnelian beads, goes to suggest that these were not pastoralists, but essentially farmers with small heards of cattle for their daily use. Whether the metal objects found in these houses were locally made or imported is not known, but the axes are so far unique.

The evidence, therefore, suggests that these early agriculturalists lived in small, practically self-sufficient villages all over Madhya Pradesh and Maharashtra, and much of Gujarat, Bihar, and parts of Orissa and west Bengal, though except Madhya Pradesh (Navdatoli) and Maharashtra (Inamgaon), excavations in any of the other areas mentioned above have not been large enough to give an idea even of a single house! However, every excavation, small or large, adds to our knowledge. Thus work at Eran on the Bina has shown that the Chalcolithic settlement there was intelligently protected by building a mud-wall on the

northern side (which faces a plane and is thus fully exposed), whereas on all the other three sides the river affords natural security in the form of a deep and broad moat. Such a mud fortification or embankment was also probably there at Nagda on the Chambal and at Maheshwar, though none seems to have existed on the opposite bank at Navdatoli. The latter might have been a fairly large village, about 400 metres from east to west and the same distance from north to south. At present this area is cut up into four separate mounds, of which mounds designated as I, II and IV are close to each other, whereas the third is a little away. On it was later built a Buddhist stupa, probably in the time of Ashoka—a fact which suggests that, originally, there was probably a shrine here in the Chalcolithic times.

Navdatoli is one site of which we have a fairly good idea. We know, for example, the likely layout of the village, the nature of the house-types, the probable density of the population (as it changed from time to time with the growth of the village), the food habits of the residents and the nature of their occupation. We also have some insight into their religion, their likely origin and the way they disposed of their dead.

Such an intimate knowledge of the life-ways of people living some 3,500 years ago or earlier is due to the fact that this site was extensively dug by the Baroda University and the Deccan College for three seasons. Full reports on these excavations are also available.

What is remarkable is that right from the beginning (*c.* 1600 BC), the people had occupied the highest terrace formed during one of the phenomenal rises of the Narmada. The top of this yellow-brownish silt had turned blackish because it was covered by grass and vegetation. If there was a thick vegetation, it was cut and the grass removed. Over the black soil so exposed were built simple, round or rectangular mud-walled huts. For doing so, no foundation was necessary. Undressed trunks of young *babul* and *khaire* trees were selected and planted into the specially dug, round holes, about 20 to 25 cm deep. In the case of round huts these wooden posts were invariably found placed within thinly dug space between an inner and an outer circle. The normal distance between two wooden posts was about 20 to 30 cm, and there were several such wooden posts, depending upon

the size of the hut. A screen, woven out of split bamboo, was placed on thin wooden scaffolding, and on it was plastered clay or mud from both sides. The exact height of these mud-walls could not be ascertained as no intact or nearly-intact wall was found. In the earlier period, for nearly 200 years, these mud-walls as well as the floors were whitewashed with lime and cow-dung. Later, the use of lime became infrequent and disappeared.

The smaller round hut had a diameter of 1.5 metres, the largest over 3.7 to 4.6 metres. One rectangular room, whose ground plan was found complete, had all its wooden posts preserved, though charred. This hut with 10 posts in north-south direction and 9 posts in east-west direction was about 3×2.1 metres. Others were larger, and built on the principle of the round huts, with wooden posts placed at an interval of 30 cm or so.

Initially, the village was located on the south-eastern side. Later, the area to the north, almost over-looking the then bed of the Narmada, was occupied. The population naturally grew from about 100 to 200-300.

The inhabitants of these simple-looking huts manufactured their own tools/weapons. In fact, every family did so. These were primarily parallel-sided and penknife-shaped blades of whitish chalcedony, and a few lunates and trapezes. These were made locally and by every family throughout the entire life of the village which lasted nearly 300 years!! Thus manufacturing of lithic blades was a cottage industry. And this was so all over Madhya Pradesh, Deccan, Andhra Pradesh and Karnataka—in fact, wherever the raw material was locally available.

Though technologically in a stone age phase, these prehistoric Navdatolians used varied, beautiful and, in fact, a highly sophisticated pottery. Practically all, save large storage jars, was made on the wheel. The predominant colour was red, or shades of red. The surface is fairly smooth, but because the clay is impure and not well levigated the slip (the red brown coating) flakes off, exposing granular inclusions. The baking also is imperfect, so that the core is ill-burnt, and the vessels or shards when struck do not give a metallic sound. In spite of these imperfections, the vessels have a graceful look and are beautifully decorated with geometric, naturalistic, human and animal designs. Permutations and combinations yield over 600 designs.

This range of design is far more than what can be witnessed not only in the Harappan, but in any other culture in India, either before or after this period.

With these designs go the varied forms; some 15-20 major shapes occur. Among these, the large variety of bowls, with or without stand, immediately draw our attention. These chalices on a slender but solid stem, with a flat base, have rightly been compared with the champagne and brandy cups of European society. Nothing like these cups was seen in the Harappan. A small, solitary specimen has so far been documented from the Pre-Harappan Kalibangan, while cups with a bright red surface bearing paintings, but all practically of one type, characterize the Rangpur culture of Saurashtra. Since such footed bowls, called goblets or chalices, disappear later, and emerge only with the Iranian contacts, and since they are a characteristic feature of the early Iranian and other west Asiatic cultures to which those from Navdatoli show a great resemblance in shape and design, the present writer thinks that the Navdatoli culture was, in part at least, derived from or inspired by Iranian cultures.

Be that as it may, from their extensive repertoire of pots and pans we may reasonably form an idea about their way of life, and its position in the evolution of material cultures. Though the Navdatolians could not boast of a city civilization, still settlements on either side of the Narmada could be described as well-developed, self-sufficient agricultural villages, having a high standarad of living. Along with the remains of animal food, such as beef, meat, pork and venison, have been found quantities of charred wheat, rice, lentil, peas and two unidentified species of legumes. Some of this food might have been cooked in the oil crushed from flax seeds (*alashi*), though this gives an obnoxious smell (at several street corners in Varanasi some poor people are still found using this oil for cooking).

All these grains were presumably grown along the freshly laden silt of the Narmada and also in the ploughed fields in the terraces (though evidence of actual ploughing is not yet available).

This food was cooked on well made, low-walled, one or two-mouthed *chulah*s, having a prepared surface, enclosed by a clay border, so that the ash and embers did not spread in the house. The food was evidently cooked in small and large open-mouthed

vessels, which were painted from outside, since so far no ordinary, unpainted vessels, bearing soot-marks, have been found.

The grain was pounded or crushed and turned into flour on boat-shaped stone querns with the help of plano-convex stone pebbles of quartzite collected from the Narmada bed. Every house had at least one quern, which was found embedded in the house floor.

For preparing the dough, large flat dishes with a coarse, granular base were used. Such large dishes, called *parat*, are still used around Maheshwar.

For eating the cooked food there were several types of medium-sized dishes and bowls, whereas drinking water was kept in small and large *lotas*, some of which had graceful, S-shaped profile with a deep waist and very artistically painted surface. (These forms survive till today and are now copied in plastic.) The goblets (footed cups) and large bowls with a channel-spout, and bearing the painting of a man with dishevelled hair and holding a long spear-like weapon in his right hand, seem to have been meant for ceremonial purposes: the channel-spouted bowl for pouring out libations in a sacrifice, for which a *vedi* (square sacrificial pit) was found in the centre of one of the houses; whereas Soma-like drink might have been served in the goblets. Though what this drink was cannot be known, there is no doubt that for using these goblets the inhabitants must have had houses with very fine, smooth floors and also probably small wooden stools (tables). Whether any of these drinks was spirituous or not is difficult to say, but vessels with a long narrow neck, and broad, flaring top and a globular body, might have served as strainers. Likewise, as in the Harappan Cemetery-H and other western Asiatic Cultures, there were small and big dishes-on-stand, though none of these was large, with a broad flaring base, as seen in the Harappan. Such elaborate vessels go well with the brick-built smooth and level floors of that civilization. But when these dishes-on-stand are found in the comparatively small, and mostly one-room, mud-walled houses at Navdatoli, we begin to wonder at the sophistication these people had reached in the midst of their modest, agricultural surroundings.

However, in this vast repertory of pottery vessels, we miss spoons, and cups with handles, though there are a few larger

vessels with lugs for holding with two hands. Both these—the spoon and the handled cup—are rare even in the Harappan. This simple fact underlines the essential Indianness of all the prehistoric Indian pottery. One cannot say 'oriental,' because handled cups do occur in Iran, Iraq and Turkey, and spoons and small handled cups occur in the Egyptian, the European and even many western-Asiatic cultures, from a very early date.

This rich and varied pottery complex of Navdatoli was not formed in a day. It took not less than 300 or more years to reach the finished stage. In the earliest period at Navdatoli, we meet with not only the characteristic Malwa or black painted red ware, but also small quantities of a black-and-red ware with paintings in white, and white or kaolin-slipped pottery with paintings in black. The source of the last mentioned is not known, but the black-and-red ware with white paintings occurs as a distinct phase at Kayatha. And here it definitely came from Ahar or some such site in the Banas Valley. However, both these cultural or ethnic influences disappear later, and a new one emerges on the scene. This influence is represented by a pottery which has usually a slipless matt red surface, with simple geometrical paintings in black, and a well baked core, so that the vessel or even a shard gives a metallic ring when struck. And in this ware known as 'Jorwe,' after the type site on the Pravara near Nevasa in Maharashtra, there are only three or four types of vessels, including bowls with acute carination and rounded base, and medium-sized globular vessels with a high or low cylindrical, narrow neck, popularly known as *Ghatas*. Navdatoli has not yet given the characteristic spouted Jorwe vessel.

These details about the pottery in any prehistoric culture are our only, or one of the major, means of detecting the culture-change—arrival of new people or ideas or both—in an otherwise very static existence for centuries. For at Navdatoli, though there is evidence of a large scale fire after Phase II, there is no evidence to say that this was due to enemy action or aliens. Except the introduction of the Jorwe ware, and the reduced use of lime for whitewashing the walls and doors, there is no change in house plans or method of constructing the huts, of making blade tools.

Unfortunately, there is no evidence till today to enable us to say anything positive about the way the dead were disposed of or about the religion practised by the inhabitants at Navdatoli or for that matter any other site in Malwa. The occurrence of a *Vedi* (sacrificial pit), like the pit in one of the houses of Phase I, and the vessels like channel-spouted bowls might indicate the practice of sacrifices or daily performance of *homa*-like rite, whereas the applique figures of women on storage jars might be interpreted as the worship of fertility goddesses. A careful study of the reconstructed storage jar probably indicates the applique outline of a shrine beside which are shown a crocodile and the goddess.

Any future excavation at Navdatoli or Maheshwar should be planned with these problems in view. Meanwhile, we can confidently summarize the main features of the life witnessed at Navdatoli. People lived in small, round or rectangular mud-walled houses with a conical or flat thatched roof, and a verandah where the cattle were tethered. Each family made its own tools/weapons of chalcedony and nodules which were gathered from the river bed or trap veins. Most of these were used in the home or in the field, and a small number for fishing and hunting. How copper tools/weapons were made is not known, but these were certainly superior to those of Ahar in south-eastern Rajasthan and contained the rare swords or daggers with a midrib. The few terracotta toys and beads of semi-precious stones and steatite were also manufactured locally. These modest houses were lighted by equally artistic, leaf-like pointed lamps. But their most outstanding possession—and contribution—was a rich painted pottery. This was prevalent all over Western Malwa, that is, from Ujjain in the north to Navdatoli in the south.

Offshoots of this culture had crossed the Tapi and reached the Bhima and one of its tributaries, the Ghod, and the Nira where at Chandoli, Songaon and Inamgaon, it seems to precede, as at Navdatoli, the Jorwe Culture, but later displaced by it. The occurrence of Jorwe pottery at Navdatoli and other Malwa Culture in Maharashtra shows inter-provincial culture contacts which might have been based on ethnic and political relations as well. But these facets of former life-ways always remain elusive in the absence of any evidence of writing.

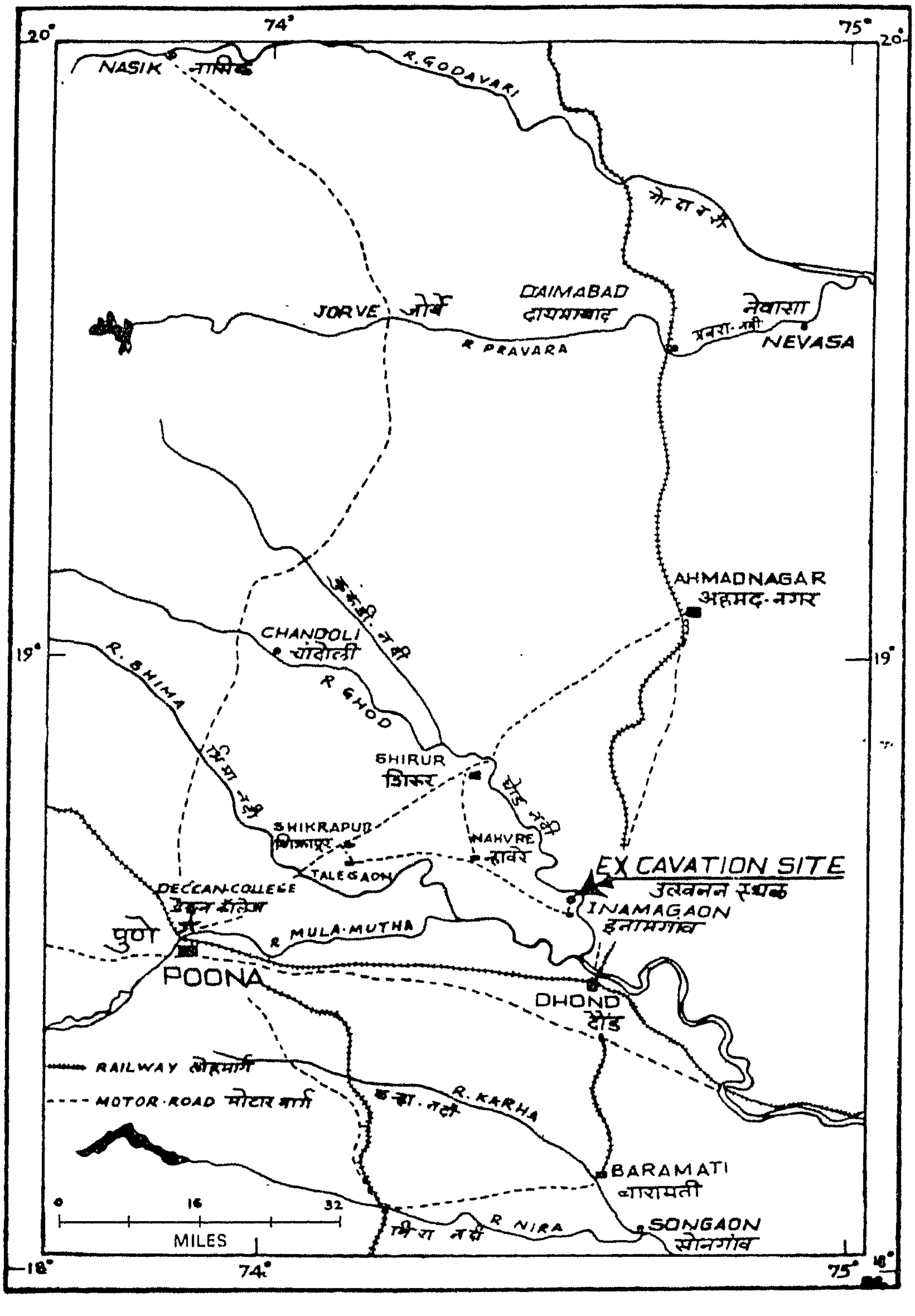

Fig. 28. Map showing the excavated Chalcolithic sites in western Maharashtra.

This, however, was the period when regional of sub-regional cultures began to take shape and later grew into linguistic and cultural units. It is but natural for a large country like India with so many distinct and semi-distinct natural zones.

Archaeologically, the Khandesh region—the region between the Tapi and the Godavari—is documented by different kinds of pottery fabrics from the Tapi Valley. Here sites like Prakash and Savalda, which were partially excavated, and numerous other sites which have been only superficially explored, have given a painted pottery which is distinct from that of Navdatoli and Jorwe.

This region known hitherto as Khandesh is now the home of the Bhils and other primitive tribes; at the same time, its rich alluvial plains produce excellent wheat and cotton and, now, bananas. It is more than probable that the last two were first cultivated when a civilized life was introduced into the region by the painted pottery people. This 'Khandeshi' Culture was otherwise not much different from that of Malwa in the north or Maharashtra in the south. The small excavation at Bahal and at Tekwada on the opposite bank show that as far as the burial practices were concerned, the Khandeshi people seemed to have adopted the then prevailing practices from the south.

Since the evidence of the Jorwe Culture is best revealed at several sites in Maharashtra, like Nevasa and Inamgaon, we would give first an account of the Jorwe-Nevasa Culture.

Jorwe Culture

This is the best known preshistoric culture of India after the Harappan. Not only a number of Jorwe sites have been excavated, but these well-planned excavations have been more fully reported. Secondly, something is known about the people who produced this culture, since all or a majority of them were buried in the houses, just where they lived. Some definite insight is also provided about their religion and its likely affinity with that of western Asia.

The Jorwe Culture is named after the type site Jorwe, on the Pravara, and is distinguished by its pottery, and well-marked geopraphical boundaries, with the Godavari in the north and the Krishna in the south. The eastern and western boundaries still remain to be determined. This culture was not the first or

the earliest in western Maharashtra but by about 1200 BC it had spread over the Krishna-Godavari valleys ousting or incorporating within it the earlier cultural manifestations from Andhra-Karnataka in the south and Malwa in the north. Though its people by and large depended upon the lithic blades, almost invariably made of whitish chalcedony, for all their daily needs and the occasional hunting and fishing, they were conversant with the use and technique of making ground stone-axes, adzes, chisels, pounders and rubbing stones, for which they utilized the local basalt dykes, as the latter give a much finer and tougher surface. This lithic kit was freely supplemented by the copper/bronze tools and weapons, among which the small dagger-head with antenna-like butt from Chandoli is unique. Liberal use was also made of copper-bronze ornaments, for at two sites necklaces were found around the neck of a child, strung with threads of cotton, silk and flax, whereas at Inamgaon were found no less than 15 anklets with slightly broader ends, their flat surfaces having an incised decoration. All these three aspects of the material culture of the Jorwe people formed a part of the common pool, and are not in any way distinctive in either form or material.

So also their houses. These were, as so well illustrated by Inamgaon, square or rectangular houses in the beginning, with a mud wall supported by wooden (undressed) posts inserted at regular intervals into the floor, and the intervening space filled up with interlaced screen made from easily available local creeper. These early Jorwe houses (huts) were fairly large (4.6 × 3.7 metres), some had possibly an open verandah, where grinding of grain was done on a large basalt slab with a concavity. At this time a regular distance of 1.5 metres is seen between two houses, and presumably this ran through the section of the settlement. Anyway, the early Jorwe settlement at Inamgaon has all the signs of a prosperous village with a mud and stone fortification, possibly around the arch, stretching from the west and north to east, with the Ghod river forming the southern defence line. Outside this arch on the north-west, there was a stone embankment made with pebbles and boulders to guide the water channel, after a flood.

Not only the huts are large and well laid out, but the occupants possessed a large number of copper/bronze anklets. These

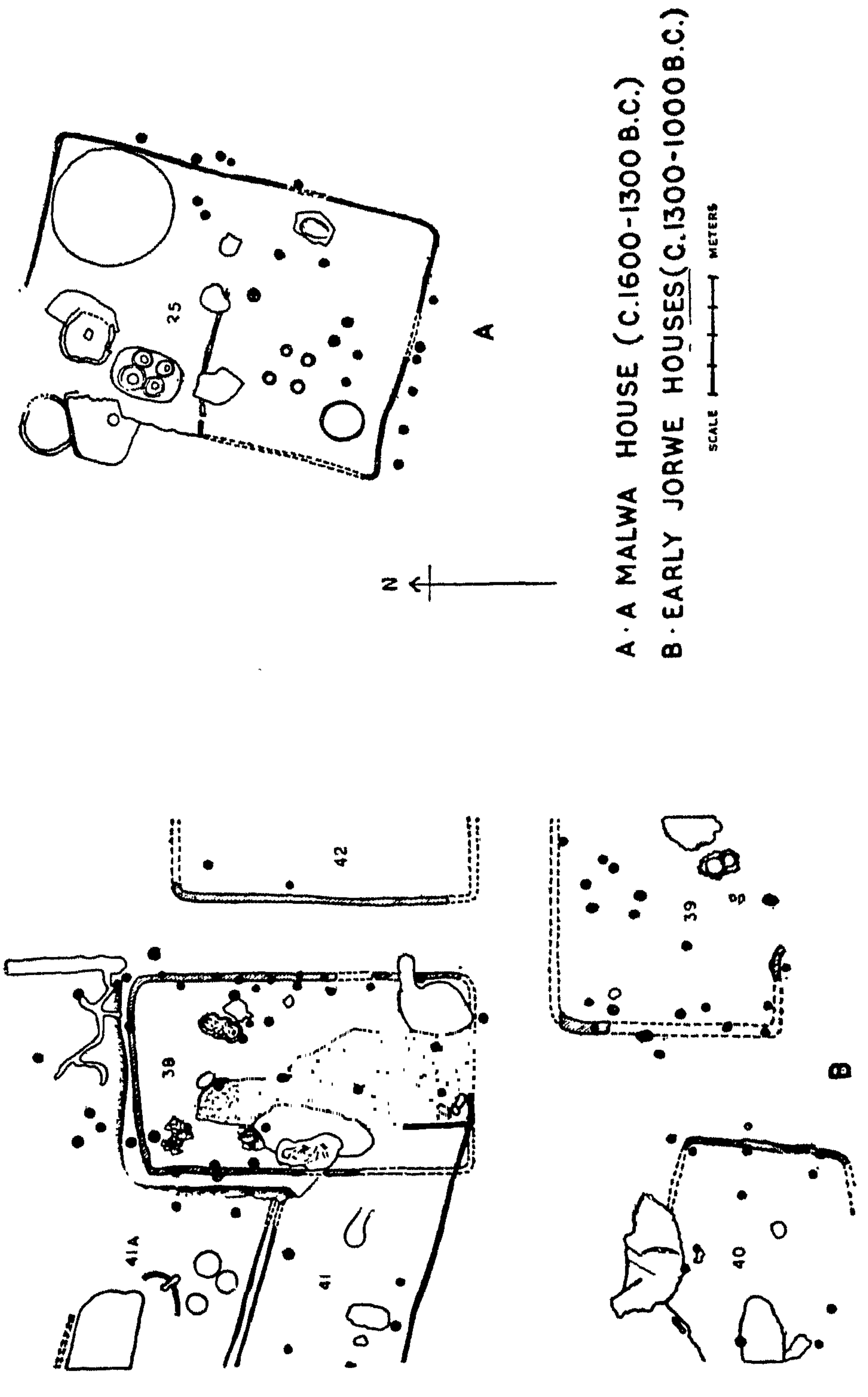

Fig. 29. Early Malwa and Early Jorwe House, Inamgaon.

and other copper/bronze objects were made in the village itself, as the occurrence of a lump of copper ore in 1972-73 would suggest.

Besides, the inhabitants had a private shrine for a mother goddess who was worshipped in two forms—one having a head and the other without a head, and standing or sitting on a bull. Since a similar figure of a goddess, but considerably larger, had also occurred in the earliest deposits of the Jorwe Culture at Nevasa, one can rightly say that this was the goddess which was worshipped by the Jorwe people. With the goddess was associated a bull. This, as at Inamgaon, might have been represented in a realistic form, or as at Nevasa and Chandoli, in the form of a rhyton, having a large bottle-like opening for the mouth, small hump and tail, striped body, and four low wheels on the four feet.

From the careful way in which the mother goddess was kept in a clay box, it can be seen that elaborate arrangements were made for worshipping it. These arrangements consisted of three separate parts: a semi-circular stand for keeping the figurine erect while worshipping, and holes in the body of the bull as well as in the navel of the headless goddess so that by inserting a small stick the figurine could be shown or imagined to be seated or standing on the back of the bull.

Thus for the first time we are having sufficient evidence to say that these clay figurines with a stumpy, formless head (or without head), small outstretched arms, round and prominent breasts, were meant for worship and were actually worshipped, shall we say, all over western Maharashtra, and probably in Madhya Pradesh—where similar figures occur on large storage jars—and at Uriup in distant Bihar. And the sources or the distant precursors of these goddesses were the earlier centres of civilization in western Asia, such as Nuzi on the Iraq-Iran border and Catal Hüyük in Turkey. The ultimate originators of this cult of the Mother Goddess seem to be the *Homo sapiens* of western and eastern Europe, who 20,000 years ago created the first true art —painting, sculpture and engraving. It is indeed a moot point how this cult spread to India and became the religion of the prehistoric Maharashtrians, unless we presume that there must have been some folk migration.

This cult of the mother goddess remained, even though the

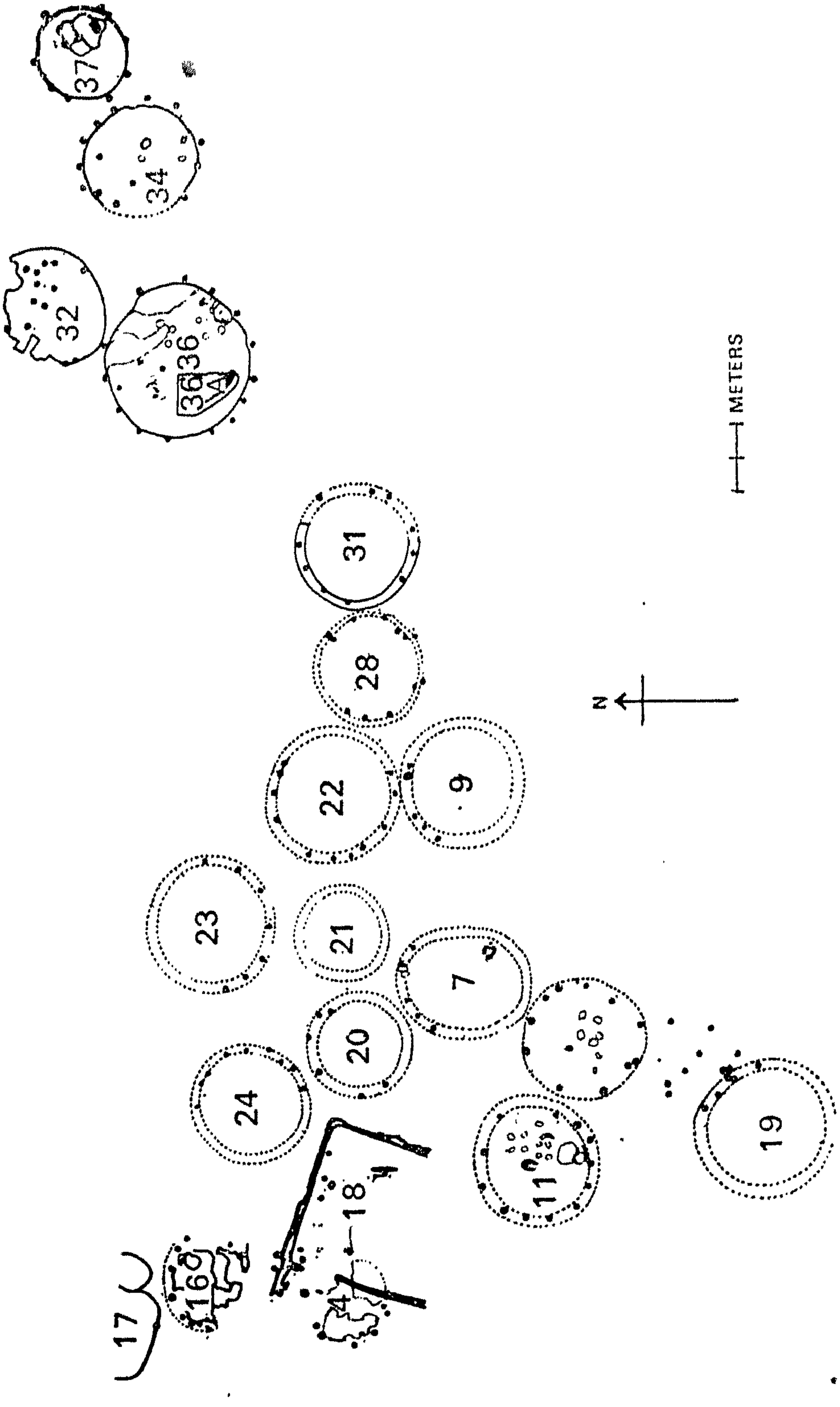

Fig. 30. Late Jorwe Circular Houses show the settlement pattern.

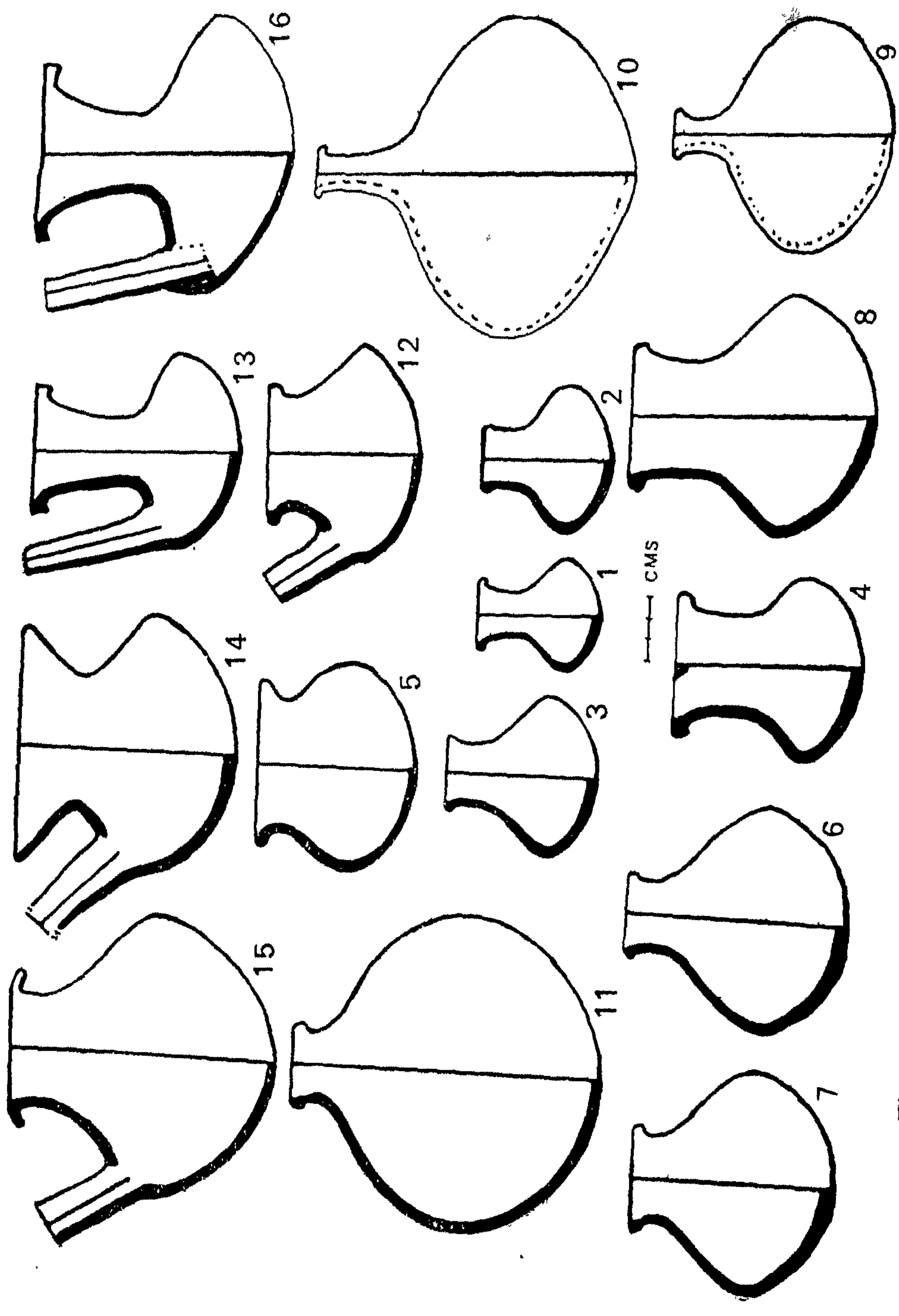

Fig. 31. Some characteristic pottery of Jorwe Culture from Inamgaon:
1-8, *Lotas* or Vessels for using water on various occasions, such as washing hands, drinking; 9-10, Oil or medicine pots with a very narrow high neck; 11, Medium-sized jar; 12-16, Spouted pots with carinated or sharply bent belly.

settlement pattern and the form of the houses changed. For at Inamgaon the houses of the Late Jorwe phase were uniformly circular, with probably a conical roof. And these were built close to each other without leaving any space in between. The pottery also shows some deterioration. The fine red surface with paintings in black gives place to a coarse red surface, mostly smoothed and without a slip, and the vessels—particularly bowls—lose their acute angle (carination) on the belly. However, even now other features of the pottery still remain a mystery. Take, for instance, the *lota*s. There are small, medium sized and large vessels with a rounded base, angular or carinated belly, and flaring 'outgoing high walled' rim, with a long tubular spout luted to the belly. These are sometimes vertically placed. Naturally all these are *lota*s—vessels in which a liquid, most probably water, was kept and poured over a fire while performing a sacrifice. However, their frequency, and various sizes—from about 7.5 cm of height and breadth of about 20 cm to larger sizes—suggest that these vessels were for daily use in the family; the smaller ones for children and the larger ones for adults. Or is it likely that these peculiar vessels contained not simple water, but some other liquid, which was taken as food? And this was sucked through the long tubular spouts, as was the practice with some Red Indian tribes of south America and Mexico?

There are other vessels which are similar in shape—carinated belly, and narrow, high, cylindrical neck, and rounded base. Because of their peculiar form, they would hold comparatively less liquid, and hence a specialized function is suggested. Secondly, these vessels must have had a separate hollow stand to support them. For very few can stand erect, or are we to suppose that in the house floors there were several depressions for keeping these vessels?

The same is true of Jorwe bowls. Normally, they have a rounded base and carinated sides, so that they easily wobble.

As opposed to these kinds of vessels, there is the total absence of flat-based dishes or *thāli*s. And it is difficult to imagine an Indian home without this most essential article of daily use. While one cannot be definite, these positive and negative features of the Jorwe pottery indicate the use of a more liquid diet and the absence of *roti* and *chapāti* (leavened or unleavened bread), made of wheat *jwār* or barley.

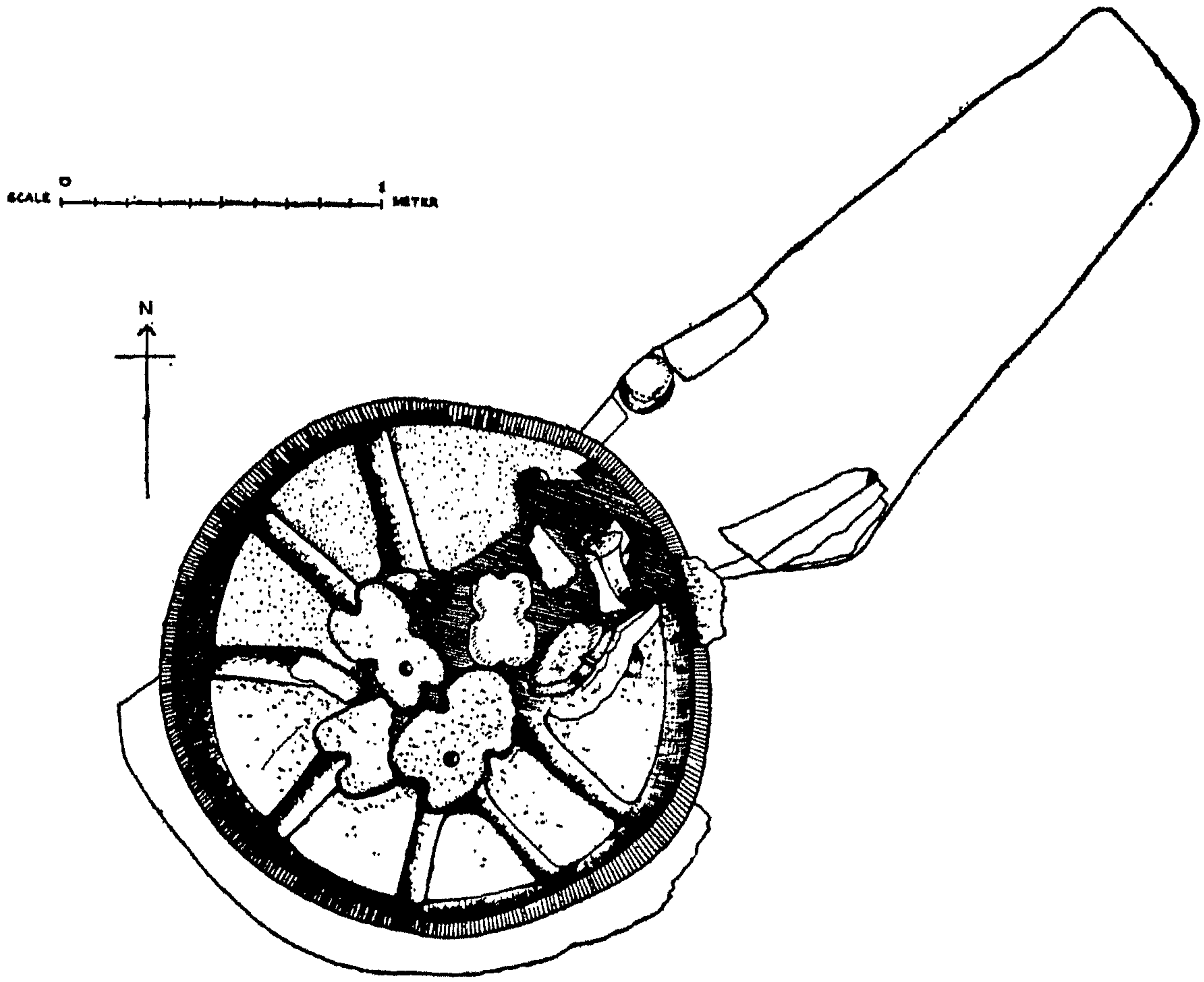

Fig. 32. Pottery kiln, Early Jorwe Period, *c.* 1300 BC.

All the early Jorwe pottery was baked in a highly advanced, well-made, closed kiln, wherein, with the help of radially plain flues and specially made stoke-hole, the heat could be controlled. Moreover, large and small plano-convey clay cushions with holes and neck rests for angular pots were provided, so that the pots did not come into direct contact with the fire.

The Jorwe people were also very conservative. Not only does their pottery show very limited shapes, but even the designs which are painted in black over a dark red, slipped, surface, are mostly geometric, and very stereotyped. Normally, plants, flowers, or fruits, animals and human beings,—stylized or natural—are absent. The occurrence of a very realistic painting of a dog or dog-like animal, and the panel of deer, both on shards from Nevasa, and small animals shown as running on shards from Daimabad and Prakash(?), shows that the Jorwe

potter or people did appreciate realistic art, which they either practised or borrowed, though rarely. Another feature of the Jorwe potter is the unfailing occurrence of a solid dot or a cross, etc., in the middle of a bowl, or the belly of the *lota*. These are usually known as 'potter's marks,' which they may well be. But such marks are unknown to the Harappans and other Chalcolithic Cultures of India. Graffiti (designs scratched on the pot) also occasionally figure on the Jorwe pottery, whereas their storage jars, which were partly handmade, show a finger tip decoration round the neck, but contain very few other decorations. Of such graffiti decorations, the drawing of a cart with solid wheels, drawn by humped bulls, is extremely interesting, as it shows the existence of wheeled transport at this time. There was river traffic as well, as suggested by the discovery of a jetty on the eastern end of the mounds on the river and the paintings of boats on pottery.

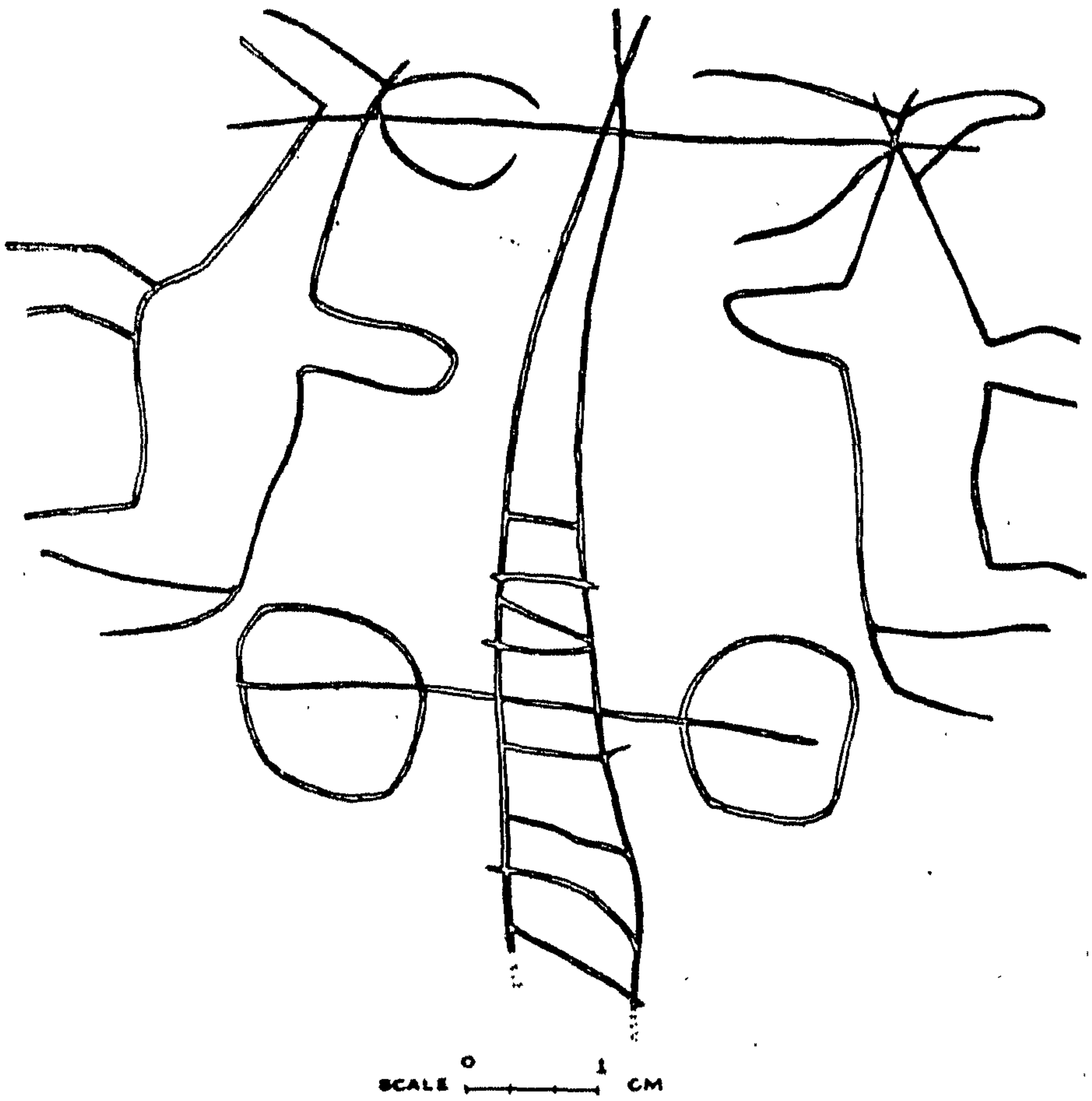

Fig. 33. A cart with wooden frame, and solid wheels drawn by two humped oxen, Early Jorwe Period *c.* 1300 BC, Inamgaon.

There is a view that the graffiti marks are a degenerated form of the Indus script, for there is some similarity between the pictographic letter and the scratched mark. Though there is some truth in this observation, we have no means to ascertain that in the later Chalcolithic Cultures these marks were significant or were drawn as mere repetition of the older signs.

By and large, the Jorwe people were non-vegetarians, and consumed principally beef, to some extent meat, pork and venison, as well as quail (soft-bodied animal) collected from rivers and ponds. Fish and birds must have been eaten, though so far only a few bones of these are found in the excavations.

This animal diet was supplemented by wheat, barley and possibly sorghum (*jowar*), besides lentil, peas and other cereals which were also eaten at this period in Madhya Pradesh. Both these foods were cooked on small circular *chulahs* of mud or clay, with an opening on one side. Compared to what we see at Navdatoli and Ahar and at Inamgaon itself, in the Malwa houses, these would be regarded as primitive or simple. One thing seems to be certain: *roties* or *chapātis* of wheat/jwari as we see today were unknown or could not be made at that time, because large quanities of flour, coarse or fine, cannot be ground on small, boat-shaped stone querns. It is more easy and convenient to grind grains, soaked overnight in water on these querns, than dry grain. With the result that the dish cooked would be either some gruel, or, if steamed, a preparation like *Idali* or *Dhoklā*, or a thing like *Dosā*, but the latter requires a broad shallow pan and oil, and all the three are made of ground rice and black gram (*udid*). No tongs have been found anywhere.And as far as the history of this simple but now essential utensil goes, it was known to be used in early Greek times, about 7th century BC. Before that, people anywhere used either the naked hand or a piece of cloth or some other material to lift up the vessel kept over the *chulah*.

Cooked food or milk, curd, oil, etc. were stored in a variety of vessels, and some of these had lids, and presumably the small or medium sized coarse grey ware bowls and basins were used for this purpose. For the few lids are found in these fabrics only. Some of these lids have got a prominent knob, others just a pinched protuberance. It also appears that the receptacles or vessels, which they were to cover, did not always have a flange,

so that the lids might not make the containers airtight. In this particular case too, the later Chalcolithic Cultures were much inferior to the Indus and the Cemetery-H Cultures wherein we notice vessels with elaborate flanges and the corresponding lids with a groove to fit into them.

Whatever might be the other aspects of this culture, the lamps they used for lighting their modest huts were large and simple, but artistic. These are invariably found in the form of a pipal leaf—with a flat, coarse, under-surface, a raised border (about ½ cm) and a central longitudinal depression for placing a wick.[1]

The Jorwe Culture is also noted for its distinctive burial practice. Whether a child or an adult, man or woman, all were invariably buried in the house, either under the living floor, or in the verandah. This has now been conclusively proved by the recovery from Inamgaon of numerous house plans with definitely made pits in the floor containg skeletons. This substantiates the evidence from Nevasa, where no less than 110 burials have been found so far. At Inamgaon so for 55 house burials have been recorded. Depending upon the status in life, and probably wealth as well, the individual, if a child, was buried in one or two urns, which are usually coarse blotchy grey in colour, with a broad flaring mouth, for allowing the bones to be placed within. These urns are kept horizontally face to face in a shallow 60 cm deep pit. At times, one or two of these urns each contain a painted Jorwe pot as well.

It has not been possible to ascertain so far whether a child's corpse was exposed for some time, and after the flesh dried up, the bones were picked up and placed within the urns. At Nevasa, in the very first pot burial to be discovered of a child, half of the skull was found in one urn, and the rest with other bones, in the other urn.

Adolescents or persons of the age of 14 were also similarly buried, but unlike the child, in this case the body was found in an extended position, with practically all the bones in their proper position, except the feet which were missing. This skeleton was found placed in two pots in a pit. Most of the body was

[1]Each lamp held about ¼ seer of oil. Though some of it was absorbed by the lamp itself, the rest burned for 10 hours. This experiment suggests that a lamp of this type could have provided light for about a week, if kept burning for about two hours every day.

enclosed in a large urn, and the legs portion covered by another pot. Adults, however, were buried in a pit, usually in north-south direction. In this case, at times the floor was found to have a coating of lime. With the body there were a few pots and pans, some kept near the head, some near the arms, some near the pelvis and some near the feet.

In the case of a child a small bowl was found placed, whereas in three instances, two at Nevasa and one at Chandoli, a copper bead necklace was found round the neck of the child. These necklaces at Nevasa were found strung with threads of silk and cotton, at Chandoli with flax. Though Nevasa, Chandoli and Inamgaon have given us nearly 200 burials of the Jorwe period, still the actual well-preserved skulls are few—not more than six or seven.

Hence scholars who have studied these physical remains have hesitated to pronounce a definite opinion about the physical and racial types represented by Jorwe skeletons. They find both the primitive as well as developed features, described respectively as 'Proto-Australoid' and 'Mediterranean.' These peculiar combinations may be traced not in the present urban and village populations, but among the tribal peoples, particularly among the Bhils and the Gonds. And in these, I think, we find the true explanation of the genesis of the Jorwe and other Chalcolithic Cultures. All these cultures seem to owe their origin to a mixture of a small percentage of a foreign element, Mediterranean or Europoid, with the indigenous population. This explains their mixed racial features in religion, pottery, food and disposal of the dead.

This Jorwe Culture, to call it by a prosaic name, was not confined to the banks of the major rivers of western Maharashtra or the Deccan plateau. It had spread to other nooks and corners, such as parts of the Ahmadnagar District, around Sangamner, which appear thoroughly deserted today.

In the absence of the knowledge of sub-regional cultures, which certainly were there, we might say that the Jorwe Culture, with its two or possibly three phases, represents a way of life which was common to not only western Maharashtra—the Godavari-Krishna valleys—but many other regions of India. This in brief was a self-sufficient village, dependent partly on agriculture and partly on animal husbandry, hunting and fishing.

Initially, this village or a section of it had square or rectangular houses which were well spread. Later, a deterioration set in. The houses became circular and were closely set. Except copper/bronze tools/weapons, each family, prepared its own lithic tools, blades as well as querns, pounders, hammer-stones and sling balls. The Jorwe pottery is remarkable for two reasons: its highly individualized shapes, and almost total absence of a *thali*. Another distictive feature of the Jorwe Culture was burial within the floor of the house. This feature as well as the workship of clay or terracotta mother goddess with or without head and seated on a bull, have close parallels in western Asia. And since no local or indigenous development of the lithic blade industry, distinctive pottery, intramural burial, and the cult of this type of mother goddess is so far seen in Maharashtra or in India in general, one has to visualize the arrival of a small body of outsiders, bearing these distinctive traits, mixing with the local inhabitants and giving birth to what is prosaically known as the Jorwe Culture. This prosaic name will remain as long as some evidence of writing is not found and the authors of the culture remain 'illiterate' and hence unkown.

This Jorwe way of life survived all over western Maharashtra, up to about the 7th-8th century BC, when it came into contact with a people who probably used iron and a pottery which was quite different from theirs. This had a black body, and a reddish rim or exterior, which is why it might be known as black-and-red ware. Another fresh piece of evidence is provided by the huge sarcophagus of earthen vessels from Inamgaon.[1] The adoption of this new fashion was very gradual. At Inamgaon, each house in Phase III had only one such black-and-red bowl. And then for some reason, still unknown, the Jorwe Culture disappeared completely, without leaving any trace (except perhaps the worship of the Mother Goddess). This end does not seem to be violent, as the top layers of Chandoli, Songaon and Inamgaon reveal no such evidence. Neither is such evidence seen at Nevasa where a 30 cm thick layer of blackish weathered layer of earth intervenes between the debris of the Satavahana (or Early Iron

[1]This has been confirmed by the discovery of megalithic monuments in the vicinity of Inamgaon. These contain iron weapons and a black-and-red pottery. Thus we might infer the Megalithic intrusion in the region.

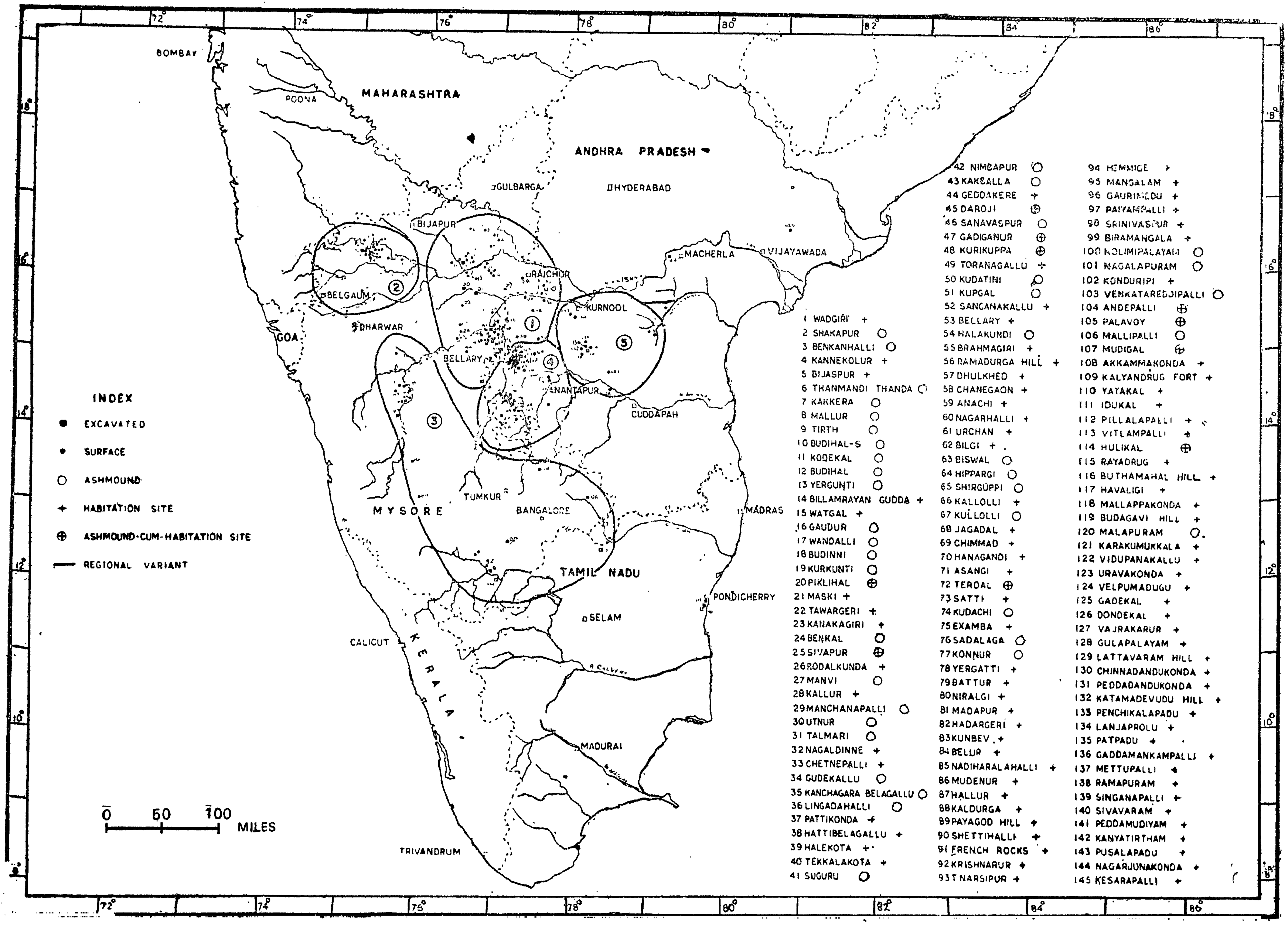

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Fig. 34. Map showing the distribution of regional variants in the Neolithic Culture of South India (after Padayya).

Age) and the top of the Jorwe Culture.

Not only the Harappan, but even the Chalcolithic Cultures have left little *specific* traces of their culture traits on the later day historic cultures of India. What survived, until the impact of the western civilization, was the independence and individuality of the village.

4 CHAPTER

SOUTHERN NEOLITHIC AND OTHER CULTURES

WITH THE south of the Krishna, actually Gokak, begins Peninsular India proper, which has the oldest land formations in India. Linguistically, it falls into four groups—Tamil, Telugu, Kannada and Malayalam—with various dialectical and regional differences. These might be compared to some extent with the various racial sub-groups of physical anthropologists.

The exact prehistory of these various physio-linguistic divisions is not yet available. What we have been able to obtain archaeologically, falls broadly into two main periods.

First, a period when man had to give up the use of tiny stone tools. But instead of leaving their surfaces crude, these stones were smoothed, by grinding, and some were even polished, so that this period of man's life was called Neolithic (the period of ground and polished stone tools). Significant though this change was, it was also found that along with such stone tools, man also made pots and pans, kept large herds of cattle and also lived in permanent houses and had taken to agriculture instead of relying on collection of vegetables and foodgrain. Each of these traits is symptomatic of a change in man's attitude to the life he then lived. He had ceased to be a wanderer, going after the chase for most of his time, and had begun to stay permanently at one place. These permanent houses would, again, be made or preferred, where many of the necessities of life—such as water, food, and raw material for making tools/weapons—were easily available.

For the kind of life these people lived or were accustomed to

live before they arrived here, the granite hills of Andhra, Karnataka, and Tamil Nadu were found to be extremely suitable. Though these hills—some indeed are no more than hillocks—are spread from Raichur in the north to north Salem in the south, and from Dharwar in the west to Guntur in the east, the hills in the present Raichur-Bellary-Gulbarga districts of Andhra-Karnataka seemed to have been preferred first. For here, in our present knowledge, occur the earliest traces of habitation of man who lived in huts, made ground and thin blade tools, and produced a handmade, dull grey-looking pottery. However, this man converted some of the long bones of animals he hunted and ate into tools/weapons, while this animal diet was supplemented by milk/curds, and collection/cultivation of *ragi* and *kulath*. It was he who first exploited the local gold deposits, besides using the ornaments made of semi-precious stones and faience. Above all, he had formed some idea of the next world, as he carefully buried the dead.

There may have been two reasons why the earliest habitation of this man are found on some hills. First, these hills, besides containing dykes which supplied the raw material for ground tools, afforded good security or protection. These hills with their bare, huge, square or rectangular boulders, look like castles, and were called so by early writers like Foote. They are, indeed, natural castles. Secondly, unlike many other kinds of hills, these granite hills have open terraces at various levels. A hill like Tekkalkota has no less than nineteen terraces. Each terrace is naturally separated from the other by small and large square or rectangular boulders. Thus several groups of people could have privacy and protection for themselves and their herds of cattle.

The first or the earliest houses were perhaps the hollows—caves and overhanging rocks—but soon the open spaces on the terraces were occupied. We thus find that the uneven ground within and just outside these overhanging rocks as well as on the open ground contain debris of mud, thatched huts and other cultural remains.

So far no differences in the material equipment—stone tools/weapons, bone tools—recovered from the open terrace houses and from under the rock-shelters are visible. But, if in future and more extensive excavations such differences are seen, then we

might postulate that there was probably a growth in population, owing to an increase in development in the cultural equipment of the Neolithic man in south India, and, hence, he began to occupy the open spaces on the enclosed terraces.

Whether this internal development or expansion took place or not, there seems to be no doubt that this culture—this way of life—spread to the plains and river valleys, gradually encompassing large parts of Andhra, Karnataka and Tamil Nadu. At the moment the various stages of expansion in the four directions from the Bellarey-Raichur-Gulbarga centres cannot be precisely dated, nor the various sub-developmental regional phases adequately differentiated, for work in many of these areas is still in its infancy. For details of the culture—house types—settlement pattern, subsistence, tools/weapons, religion, art and the racial types, we have to depend upon the excavation reports. These excavations have, indeed, been few and far between, considering the vast area, some 3,00,000 sq. km. Of these six or seven excavations, only two—those at Sangankal, Tekkalkota and Hallur—give some idea of the Neolithic houses and settlement pattern.

The houses built with the help of natural flat boulders, as forming the rear, were square or rectangular in plan, but otherwise round houses were preferred. This is clear from the plans exposed at Tekkalkota and Sangankal. The square/rectangular houses were about 5×4 metres, whereas the two circular houses, the plans of which are fully exposed, were 5 metres in diameter. Both these types of houses had probably low mud walls which were supported by round, undressed, tree trunks, each about 8 cm thick. These wooden posts were kept at an interval of 22 to 28 cm. And there were 21 such posts at Sangankal. The floor within, if uneven to begin with, was paved with stone slabs, and then plastered with clay or cowdung and white washed with lime. The mud wall had also a support of thin interwoven screen, made out of local reeds. However, the mud walls were probably not more than one metre high from the surface, so that the top 30 or 40 cm which met the overhanging sloping thatched conical roof, were just reed screens. Within such round mud huts were kept a storage jar, slightly raised above the ground by sub-conical terracotta legs, one-mouthed circular *chulah*, and smaller pots and pans (some of these might have been hung on the

thatched roof). One of the most precious possessions of a family —ground polished stone axes—were kept between the legs of the storage jar. These tools were manufactured near the dykes which often criss-cross the granite hills.

Extensive debris might be still seen south of the Sannarasamma hill at Sangankal. However, final grinding of the edges and sometimes the entire surface, was done at the habitation sites. This is proved by the existence of huge boat-shaped slabs and boulders all over the terraces at Tekkalkota and Sangankal. Though such slabs and boulders were comparatively easily available, at times more than one surfaces are found deeply worked, showing unusual preference for a particular slab.

The tools/weapons for hunting, fishing and everyday household use, such as cutting, scraping and piercing, were made of fine chert, jaspar or milky chalcedony. The first two can be had at a few places only, at Salvadgi in the Bijapur District. The other—milky chalcedony—is more easily available. But its nodules are comparatively small. Hence, the resultant tools are small. However, whatever the material, all were carefully made, and those made from flint-like chert at Tekkalkota are, indeed, a thing of beauty. All these were made by employing the crested ridge technique and formed a cottage industry, as these were made by every family whether living under or near the boulders, or in a hut in the centre of the terrace.

Where the other important possession of these Neolithic folk —viz. pottery—was made, is not known. Probably one of these houses must be that of a potter. This potter had originally no wheel. All the early Neolithic pottery is either hand-made or made on a turn-table—a simple contrivance in which a large concave shard, possibly the lower part of a round-base vessel, is taken, lump of clay placed over it and then slowly turned.

Whatever be the exact method of making pots, these pots reveal sufficient care for levigating the clay (it might have been collected from ponds), to which was added some coarse sand-containing quartz for strengthening. The pots were not well fired. Hence almost all the vessels, grey or red, have blotchy, ill-fired surfaces, the prevailing colour being grey. There is a small percentage of buff ware also, possibly due to the slip being made of kaoline. On the whole the Neolithic pottery is not attractive, and one dervies little pleasure in handling masses of

grey shards without painting and without other decoration.

However, this monotony is relieved by the sudden appearance of bowls and *lotas*, which seem to present highly sophisticated shapes. Take, for instance, the tea kettle from Tekkalkota, which has got a highly angular belly, flaring mouth and recurved spout. Another, vessel has a high, hollow base, and comparatively small, angular bowl portion above. Both these were associated with the dead. So also were earlier ones found at Brahmagiri; but in these the spout is not recurved.

Then there is a bowl-like vessel which had perforations on the rounded base, and another had four legs as in a tripod. Barring these few forms, which undoubtedly point to special needs and functions in the life of those hill dwellers, the rest of the pottery included bowls and basins of various sizes and shapes, globular pots with narrow or wide mouth, lipped bowls, bell-shaped jars, large storage jars and lids.

Such grey-looking pottery with bits of buff and red ware is found over a very vast area from the Krishna-Tungabhadra in the north (or if we include the evidence from Daimabad, on the Godavari) to the Kaveri in the south, and from the Krishna-Godavri mouths in the east to Dharwar in the west. No doubt, there existed local differences—some new forms, or the absence of the well-known shapes—but by and large one may say that a uniform culture was enjoyed by the people of Andhra, Karnataka and Tamil Nadu.

This is also proved by the then prevailing practices of the disposal of the dead. The dead were buried full-length in a pit dug into the house floor or the verandah. The normal direction was for the head to the north and the feet to the south, though this position is found reveresed at times. It was also a practice to place a few pots with the dead. Tea-pot like vessels were found near the mouth at Brahmagiri and Tekkalkota. In order that the dead is not disturbed, granite boulders were placed all over the body after covering it with the dug-out earth or *murum*. This custom is still prevalent among some people in the south today.

In the burials found so far the feet have been found missing and it is not yet clear whether the feature is due to an intentional cutting off of the feet before the final burial or because this part of the body deteriorated and was lost.

While the few intact or near-intact skeletons or skulls are, indeed, insufficient to tell us anything definite about the physical type of people who inhabited these regions some 4,000 years ago, the evidence from Brahmagiri, Piklihal and T. Narsipur confirms the evidence from Tekkalkota that the Neolithic people were medium to tall, sturdy with fairly large cranial capacity, long heads, arched vault, bulging occiput, prominent supra-orbital ridges and variable nose form.

These physical features are regarded as neither quite primitive nor fully advanced and seem to be due to a mixture of two racial elements: 'Mediterranean' and proto-australoid—the former foreign, the latter autochthonous. The late Dr. S.S. Sarkar has pointed out that these terms have been loosely used. Hence he preferred the terms 'Dravidian-Australoid complex' for a people bearing these anatomical features. And he further explains that this hybridization was due to the continuous enrichment of indigenous cultures by waves of immigrants from western Asia (Sarkar, 1972, p. 205).

Thus once again we are faced with the problem of ascertaining, who the author or authors of the Neolithic Culture in penisular India were? Were they indigenous, aborigines—that is developed both racially and culturally from the earlier people and culture? Or were they outsiders—foreigners—or a mixed people both racially and culturally?

Archaeologically, as far as the objects found in their habitation are concerned—viz. pottery, small stone tools, blades, etc., and large ground or polished stone tools—no earlier developmental stages have been found anywhere in peninsular India. The evidence from the small excavation at Sangankal near Bellary indicates a clean break between the Neolithic and Mesolithic. Usually, the small stone tools—blades—of the Neolithic-Chalcolithic are derived from the Mesolithic, but this is an incorrect impression, based on superficial studies only. Not only are the microliths made from a variety of rocks, but they are also made on a different technique and the blades etc. are usually thick. The lithic blades in the Neolithic, on the contrary, are usually thinner and larger, and made very often on chalcedony or chert/flint (wherever the latter is available).

The Neolithic pottery, though handmade, was produced on a small broken pot used as turn-table and looking grey and dull

like the bare granite hill, has no antecedents so far. No correspondence between these Neolithic forms of pots and the later pots of various historic periods has been found. In fact, both in peninsular India as well as in the north, the historic pottery shows a complete break from the prehistoric. But again, as in the north, some similarities in the potting technique as well as in a few forms of pots are seen between the prehistoric Iranian and the prehistoric penisular Indian pottery.

So far on these two grounds alone, some scholars have dared to derive the South Indian Neolithic from the distant Iranian.

Lastly remain the ground or polished stone tools. Unlike the small blade tools of chalcedony which might be derived from the microliths of quartz, agate, etc., these stone tools have no earlier ancestors. The ground tools are almost invariably made from dyke basalt, and only occasionally from diorite, and never from quartz or quartzite, sandstone or shale. These were the materials which were used in the Early Palaeolithic Period. Nor is chert etc. employed, which was the normal material during the Middle Palaeolithic.

Thus between the granite hills with their basalt dykes and their early inhabitants, there seems to be an intimate relationship. How and when did this relationship grow up? If the Neolithic people are outsiders and have any foreign strain in their cultural and physical make-up, then these few foreigners must have perceived the potentiality of the region, as the early Buddhist Bhiksus saw the potentiality of the steep, almost vertical scarps of the basaltic lava of the Deccan plateau, with the result that within a few centuries Maharashtra became the beehive of Buddhist Bhiksus and can boast of the largest number of caves in India. In the same way probably the Neolithic folk, who were the earliest wood-cutters, carpenters and builders in dressed wood and stone, saw in the granite hills with their dykes, immense and inexhaustible supply of raw material and the possibility of a secure habitation. These hills must have been much more wooded than they are today, so that the four types of tools they made (viz. the axes of various sizes, the adze, the chisel and the chopping tools) could be used in their daily life. These axes, particularly, show a very large range, some as large as 25 cm and the smallest about 5 cm. Their thickness varies according to their size. One end is always pointed or nearly so,

and the other is broad, with a straight or slightly convex edge. This is the cutting edge, and the other, which is pointed, is called the butt-end. This is inserted into a handle and tied with any kind of string or cord. Thus these are the first tools which could not be used without a handle, though the latter was still in a formative stage. The surfaces, particularly the edge of the axes, chisels and adze, were invariably ground. Thus the man had discovered the principle by which the stone tools could be made more durable and re-used when the edge became blunt.

The axes were primarily used for cutting trees, or making notches in tree trunks for climbing. The larger axes, which are like picks, might have been used for digging and as hoes in cultivation. These would be better than the short ones, as they would go deeper into the ground. All other axes, whether small or large, thin or thick, were hafted at right angles to the handle, whereas the adze as in the carpenter's tool was hafted transverse to the handle. These large stone-tools are known as neoliths, because man once again had taken to the stone-tools which continued to be used for nearly 2,000 years, from about 2,500 BC to about 500 BC, when iron first came into regular use. The stone-tools were not discarded even when copper and then bronze tools/weapons had entered man's life. The reason was simple. The metal tools were rare, whereas stone was plentiful. These tools once again show the inborn conservatism of man, for he continued to make such tools for nearly 2,000 years!

However, a slight change is visible in his life-ways. First, the grey and buff handmade pottery was replaced by vessels—particularly for eating and drinking—which had a blackish interior and exterior and are, therefore, known as the black-and-red ware. This pottery was made on the wheel. Why and when this fashion was first brought about is not exactly known. Was it just a fashion? Or was the change due to ideas of people newly arrived? Or was it an adaptation to the new ways of life? Very rarely something quite new happens without such external contacts. During the Second World War when the import of fine and cheap China Ware from Japan and England ceased, and the indigenous China Ware was just picking up, the Americans introduced crockery cups and saucers of ribbed green glass and whitish alabaster-like glass. This glass crockery, however, never took root and died out practically everywhere. However, its

occurrence or survival in any Indian home would be a reminder of the American influence between 1944 and 1950.

Just as we are able to date this American cultural intrusion in our life so precisely, we cannot fix the exact date of, nor the reason behind, the arrival of the black-and-red pottery. Suffice it to say that this ware signifies a definite advancement in the life of the people. For this pottery, as mentioned above, is not only wheelmade, but its colour effect has been achieved by a careful firing, either once or twice. And this was not the only change in the life of the people.

With the change in table-ware had also come a change in the method of burial. Not only the child but even some adults were now buried in a series of pots, laid horizontally, the orientation of the body remaining the same, that is, north-south. In this practice one might notice the beginning of the later custom of placing the dead body in a coffin, or a stone cist, kept either above or underground. Secondly, such an elaborate burial—the middle pots are about 65 cm long and equally broad with a peculiar applique decoration on their belly—means not only more space for burying the dead, but enough wealth for providing four or five pots for keeping the body. Again a number of pots and pans were placed around the body within or outside the burial pots.

Nothing illustrates better the existence of a social class or status stratification among these people than this example of a burial: an adult female, about 45 years of age, was buried in a narrow oval pit in an extended position in north-south direction with her feet towards the west. Seven vessels—bowls, globular vessel and *lota* with spout, some of black-and-red and others of dull red ware—were carefully placed, all together, near the feet. This elderly woman must have been either less rich than, or of a different group from, the one who was buried in four large pots. However, all the essential vessels which she would need for eating and drinking were provided. But among these vessels, a *thali*-like vessel is absent. What is described as a small dish (Rao, 1965, p. 53, *fig*. 23c) is really a shallow bowl.

Whether indigenous or foreign or a people of mixed race, these hill and plain dwellers decked themselves with ornaments, necklaces made of beads of steatite, faience, and semi-precious stones as well as pendents. Among the last mentioned, heavy

copper and gold ornaments found at Brahmagiri and Tekkalkota respectively are so far unique. And if the several types—round, oval and edge-ground potshards which occur in their house debris—were used as skin rubbers, one would have to conclude that these neolithic people were keen on bodily cleanliness.

Of course, these slightly concave potshards would also have been used as sharpners for grinding the edges of long bones and producing chisel points. Several such tools were found at Tekkalkota and elsewhere. This was one of the best uses these people could make of the bone of cattle (cow, buffalo) or deer they killed for their food. There is enough evidence to say that beef, mutton and venison were cooked, roasted and eaten. The marrow was taken out from the bones. Besides these large animals, burrowing animals like rat and squirrel, and tortoise were also eaten. The bird-bones from Kodekal indicate that these also formed a part of the neolithic diet. This largely non-vegetarian food must have been supplemented by cereals which grow wild, or could be grown without much difficulty. This has now been well established by the occurrence of charred grains of *hurli* (Kannada), *kulath* (Marathi), *vuluvu* (Telugu) and *kolu* (Tamil). This grain can be grown in any climate and in any soil and certainly along semi-arid and stony granite foothills. Another cereal which was eaten as early as 2,000 BC was *Ragi*. Thus Hallur and Tekkalkota have given us evidence of the most common grains which formed the staple diet of the people of south India. Still missing from the archaeological record are rice and black gram (*udid*). The existence of the former, namely rice, has now been attested from several sites in north India, from Lothal and Ahar in the west to Rajardhipi and Mahisdal in the east; so its absence in the south can be explained as due to insufficient excavation. This remark seems particularly justified since in south-east Asia the antiquity of rice has been dated by the recent C-14 method to about 6,000 BC.

We thus look forward to further work in peninsular India with great expectations, and before concluding this section a word about its contribution to art should be mentioned.

In many of these granite hills—at Piklihali, Sangankal and Tekkalkota—the surfaces of rocks which are not much exposed to the sun or rain bear paintings and drawings of man and animals. All this art work is not prehistoric, but much of it is. This

can be proved by the superposition of drawings and the use of colour in the style of paintings.

Though no full study of these paintings and engravings has been made, enough has been known to say about the nature of this art, its content and the life it depicts.

If we leave out the fine, symmetrical ovates and pointed handaxes of the Early Palaeolithic, the occasional symmetrical points of the Middle Palaeolithic and the long, slender blades of the Upper Palaeolithic, then these specimens found in rocks are evidences of the earliest art in peninsular India.

The objects drawn are usually bull (rarely deer), birds and men. Though these are realistic paintings of the bull, they are always in outline and are never shown with their flesh and bones. In the oldest paintings the colour used is red. Human figures are not drawn realistically, so that from this art work we cannot form any idea of the physical type of the people. These figures are again in outline and drawn more as caricatures or as impressions than as actual human beings.

So far only two kinds of art works are known—viz. paintings or drawings and bruising. Tekkalkota has added one more. This is puncturing, a form of art occasionally found in some prehistoric cultures, such as Ahar, Shah Tepe (Iran), Anau (Central Asia), Troy and many other sites in Turkey. It is absent in the Harappan and other Chalcolithic sites in India. At Tekkalkota was found a small lid of grey ware vessel. It is hardly 8 cm/in diameter. When cleaned, it revealed four animals —a peacock, a bull, a serpent and an antelope—all very symmetrically arranged around the flat surface of the lid and drawn by puncturing. Though the bull—and occasionally the antelope —is very common, this is the first time that we have a realistic figure of a peacock and a serpent in peninsular India. Thus from the point of view of the knowledge of the flora and animal world as well as art, this single lid from Tekkalkota is unique and important.

Though the work in peninsular India has not been very extensive, what has been done gives us some idea of the people, their physical features, houses, habitations and life-ways—their pots, pans, food, ornaments, art and method of disposing of the dead. We can also form some idea about the settlement pattern and the density of the population, if we plot the probable number

of round huts on the terraces at Tekkalkota and Sangankal. While the small terrace contained only one small hut (6.15 metres in diameter), the large terrace measuring 76 metres north-south and 61 metres east-west, contained a hut about 5.5 metres in diameter and the one at Sangankal about 4.6 metres in diameter. Both these huts were built in the centre of the terraces with wooden posts, which were later enclosed by a bamboo screen and plastered with mud up to perhaps only half the height from the floor. The hill-like Tekkalkota with 19 terraces would accommodate at least 10 to 15 huts on a terrace, and if each hut on an average could accommodate 5 persons, then one may postulate a population of a thousand persons. And with some sites in the plains as well, one may visualize a fairly large Neolithic population spread from the Krishna in the north to the Kaveri in the south. Each settlement, whether perched on the hills or in the plains, was more or less a self-sufficient unit. Each family manufactured its own tools/weapons—mostly of stone (which might be imported from some distance)—ornaments of shell, bones and semi-precious stones (occasionally objects of gold), and subsisted on dairy products and the meat of cattle, deer and burrowing animals. This diet was supplemented by *kulath* and *ragi* and probably rice, as well as plants—vegetables and fruits of which no trace can be had in the archaeological record.

The Iron Age in south India

This way of life persisted throughout South India for more than two thousand years. With the introduction of iron there was a gradual change in almost everything except perhaps the house plans; but of all these changes the most remarkable one which became a characteristic feature of the land was the method of disposing of the dead. Instead of laying the dead in a pit in the house, accompanied by four or five pots, the dead were now buried in a separate place, a cemetery. For each family there seems to have been one cemetery. The remains of the dead were collected perhaps after exposing the body for sometime; then the bones were placed underground, in specially prepared stone box called a cist. These cists were elaborate structures and must have necessitated an amount of planning and cooperation among the community and the existence of masons and other craftsmen

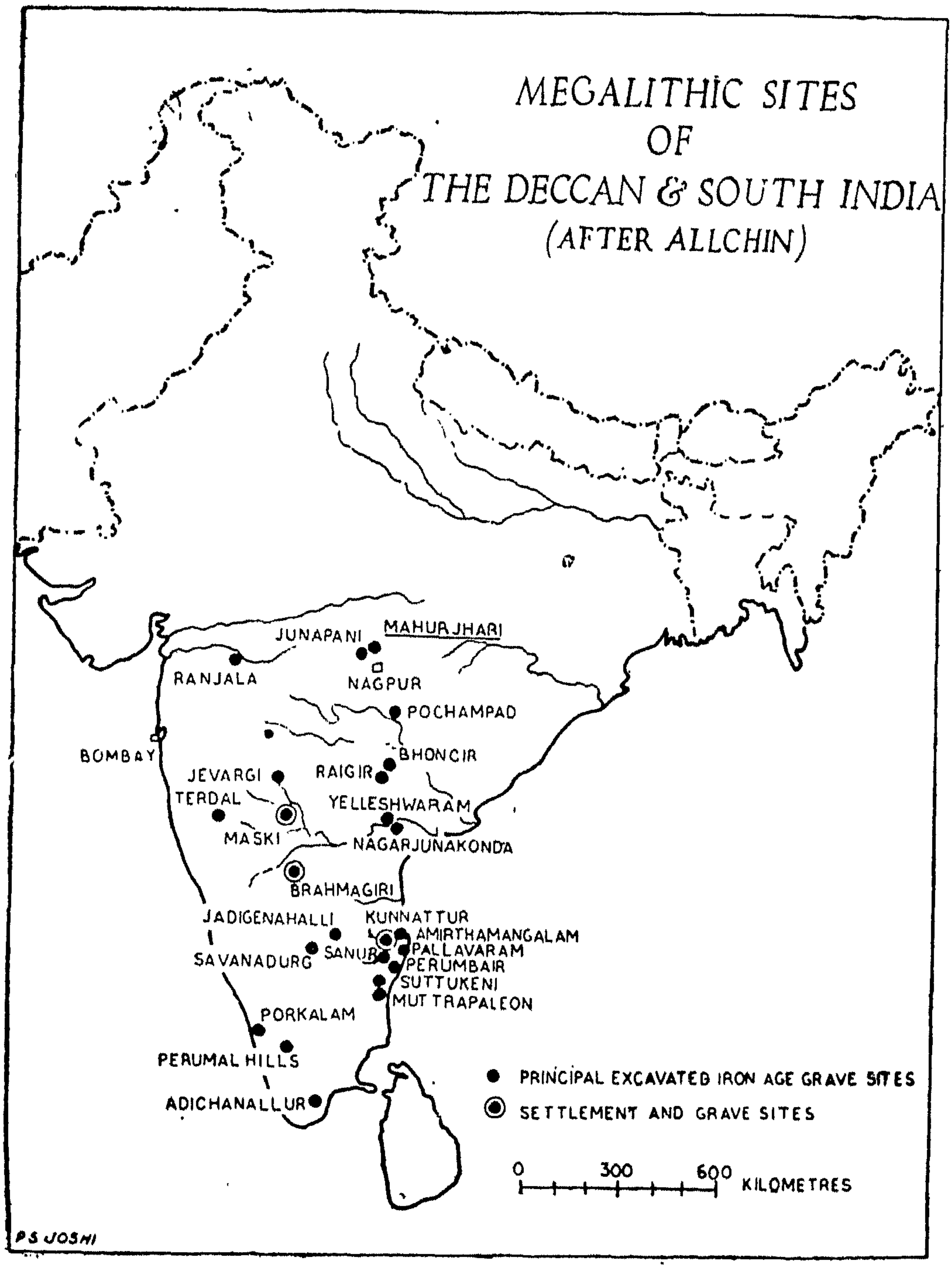

Fig. 35. Megalithic Sites of the Deccan and South India (After Allchin)

capable of manufacturing the required size of stones, large and small. It is not impossible that like Egyptian underground cellars, these megaliths must have been planned and kept ready before death.

It has been assumed that after the first burial done in an elaborate way, all the subsequent burials consisted merely of the bundle of bones which were inserted through the port-hole. Though this is likely, the underground or overground burial chambers must not have been opened again and again, after they had once been covered by a heap of stones and a cairn was prepared.

Each such cairn—with underground or overground built chambers—can at the most contain the remains of a few members of the family, who died within the space of a short time. Otherwise one has to imagine that once in every five or ten years they were opened for fresh burials. This does not seem to have been the case. If this was so, then one must suppose that the megalithic monuments did not belong to the whole population in south India at a certain time but they probably belonged to a certain class, community or a group and, even among this class, to a particular group only. This group might be the one of the rulers, priests or warriors. In any case, it seems certain that these huge monuments belonged to only one section of the then population in peninsular India and not to all. This point needs to be emphasised, because it has never been mooted. Secondly, even among this section of the population such a kind of burial cannot have been practised by the entire community. There is very little evidence that these megalithic structures, underground or overground, were reopened repeatedly. If so, it has to be presumed that only a section of the then population, perhaps a ruling class, might have followed a highly elaborate burial custom. For it involves considerable cooperation at various levels in the society as well as disbursement of wealth (whatever the wealth at that time might have been—cattle, gold or grain), for coined money had not yet come into existence.

These huge stone monuments were once believed to have been confined to the granitic regions of south India, that is, Andhra-Karnataka, Tamil Nadu and the hilly portion of Kerala; and a

scientific study has enabled the scholars to classify the monuments into various types.

Types of Megalithic Monuments

Chingleput—The monuments of Chingleput District consist of the following types:

1. Cairn-circles;
2. dolmenoid cists made of dressed slabs of stone covered by a cap-stone lying flush with the heap of cairn;
3. dolmenoid cists of rough unhewn boulders;
4. dolmenoid cists with the cap-stone lying flush with the heap of cairn; and
5. barrows or little cairn-mounds marked by quartzite chips.

Pudukkottai—The monuments of the Pudukkottai region consist of transepted port-holed dolmenoid cists with urnburial interment together with the bounding circle and the cairn-circle, enclosing single and multiple urn-burials. The sarcophagi-interment is unknown here.

Cochin—

1. Dolmenoid cists without port-holes, surrounded by a single stone circle;
2. dolmenoid cists with port holes;
3. urn-burials indicated by a gneissic cap-stone;
4. *kudakkalus* or hood-stones consisting of a large dressed circular slab of laterite with hemispheric top and flat bottom placed on the ground. This type may correspond to an urn-burial placed in a pit approached by a series of steps with a ledge round the top for containing the burial-furniture;
5. multiple *kudakkalus*, arranged in groups of three or five, each group surrounded by a large stone circle;
6. *topikallus* or umbrella-stones consisting of a dressed circular stone—in fact a truncated cone with chamfered edges at the bottom, supported on four dressed slabs or orthostats, planted firmly into the ground in the shape of a square at the bottom and so arranged as to taper to a smaller square at the top, flattened to receive the cap-stone called *topikallua*;
7. menhirs or big stones planted vertically in isolation and without any other megalithic appendages. They are not found in alignment. The stones usually have a north-to-south orienta-

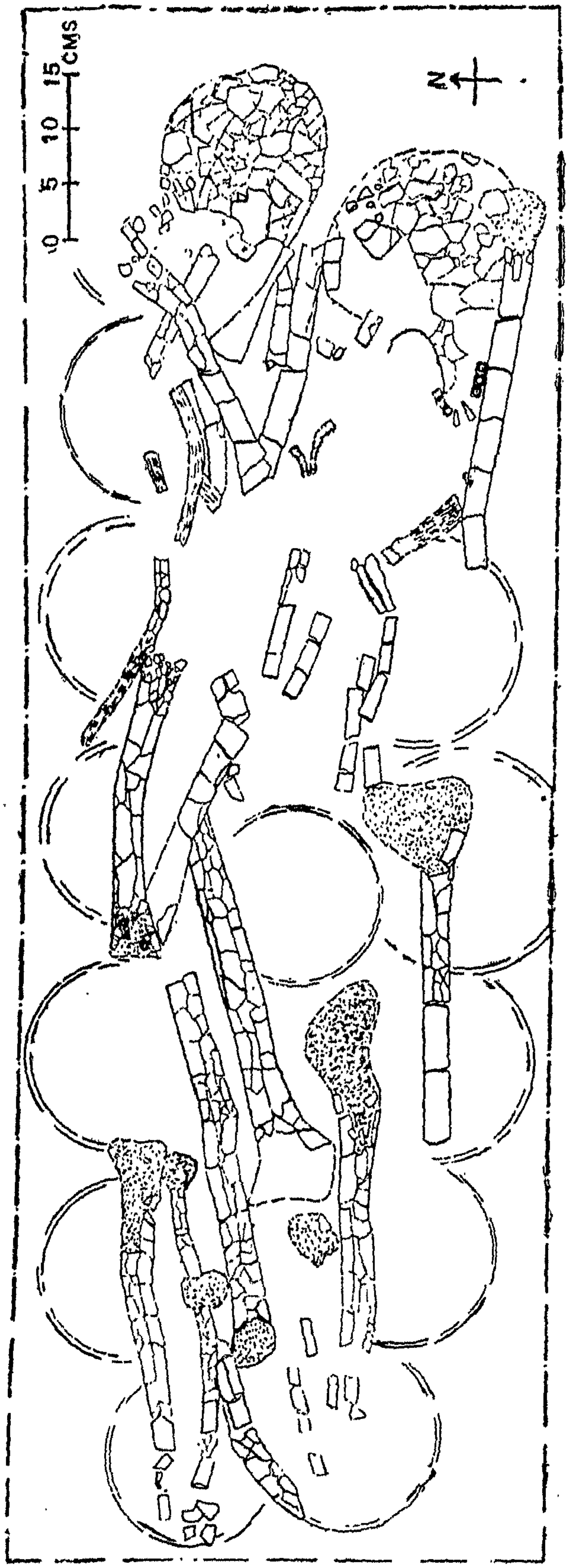

Fig. 36. Skeletal Remains, Megalith 8, Locality III, Mahurjhari (After Deo, 1973).

tion. The biggest stone noticed measured 4.9 metres in height, 3.7 metres in breadth and 45 cm in thickness.

8. Underground caves excavated into the lateritic subsoil which are found in association with megaliths, as at Kattakampal, near Kunnamkulam, Cochin.

However, very recent work has shown that these types of monuments, albeit much smaller, also existed in the sandstone regions of Karnatka, more particularly in the district of Bijapur and in eastern Maharashtra around Nagpur.

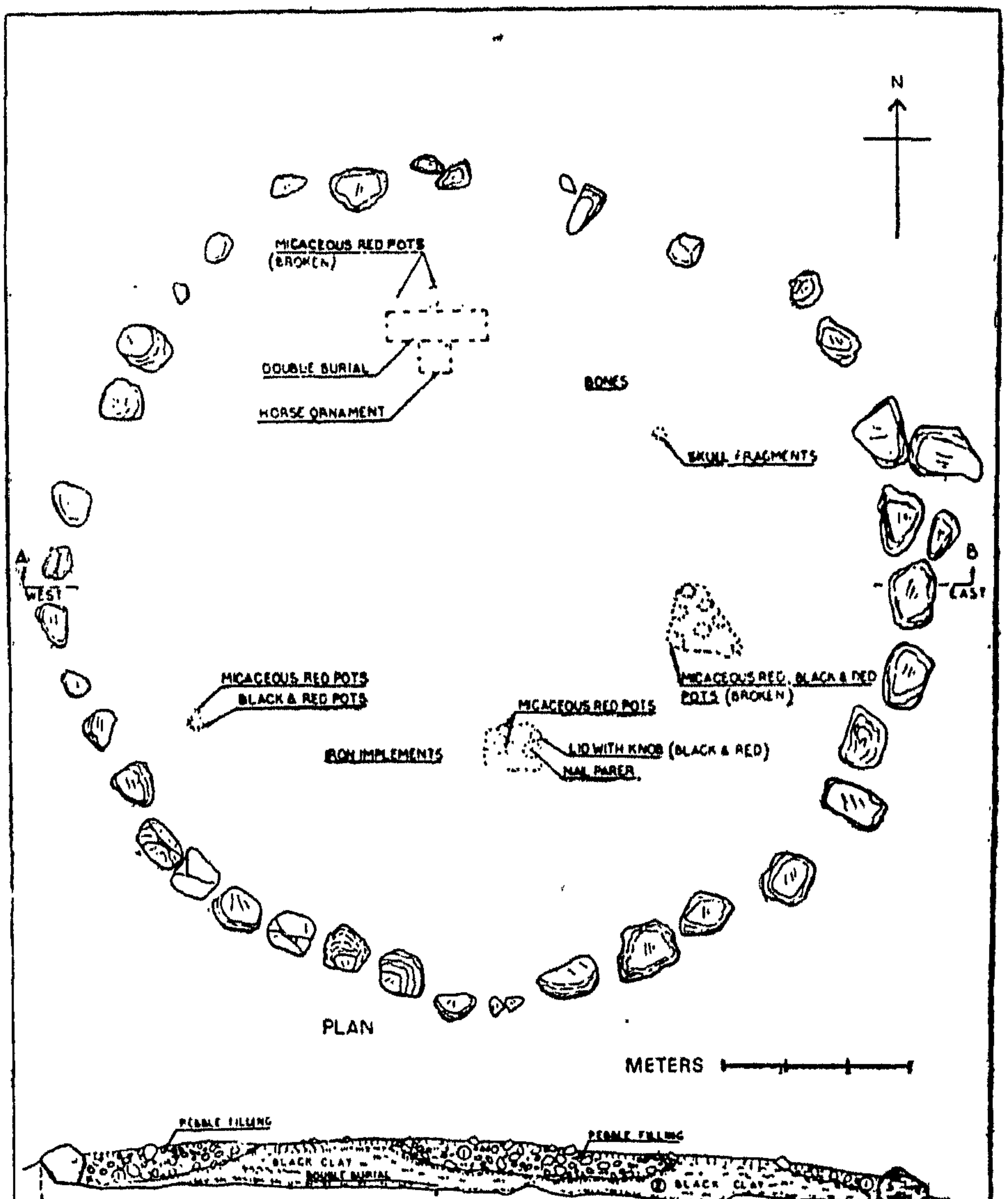

Fig. 37. Plan and Section, Megalith 8, Locality III, Mahurjhari, (After Deo, 1973).

All these megalithic monuments might fall into the general time bracket of 1000 BC to 300 BC but do not indicate an identical culture, and much less, identical people. What is significant and worth noting is the existence of a kind of socio-religious custom, which prevailed over a large part of India, at a certain chronological stage in our history. It is interesting to observe that in other parts of the world, for example England, France, Iran and Seistan, such sepulchral monuments of the dead were constructed though this period is not identical in all the countries.

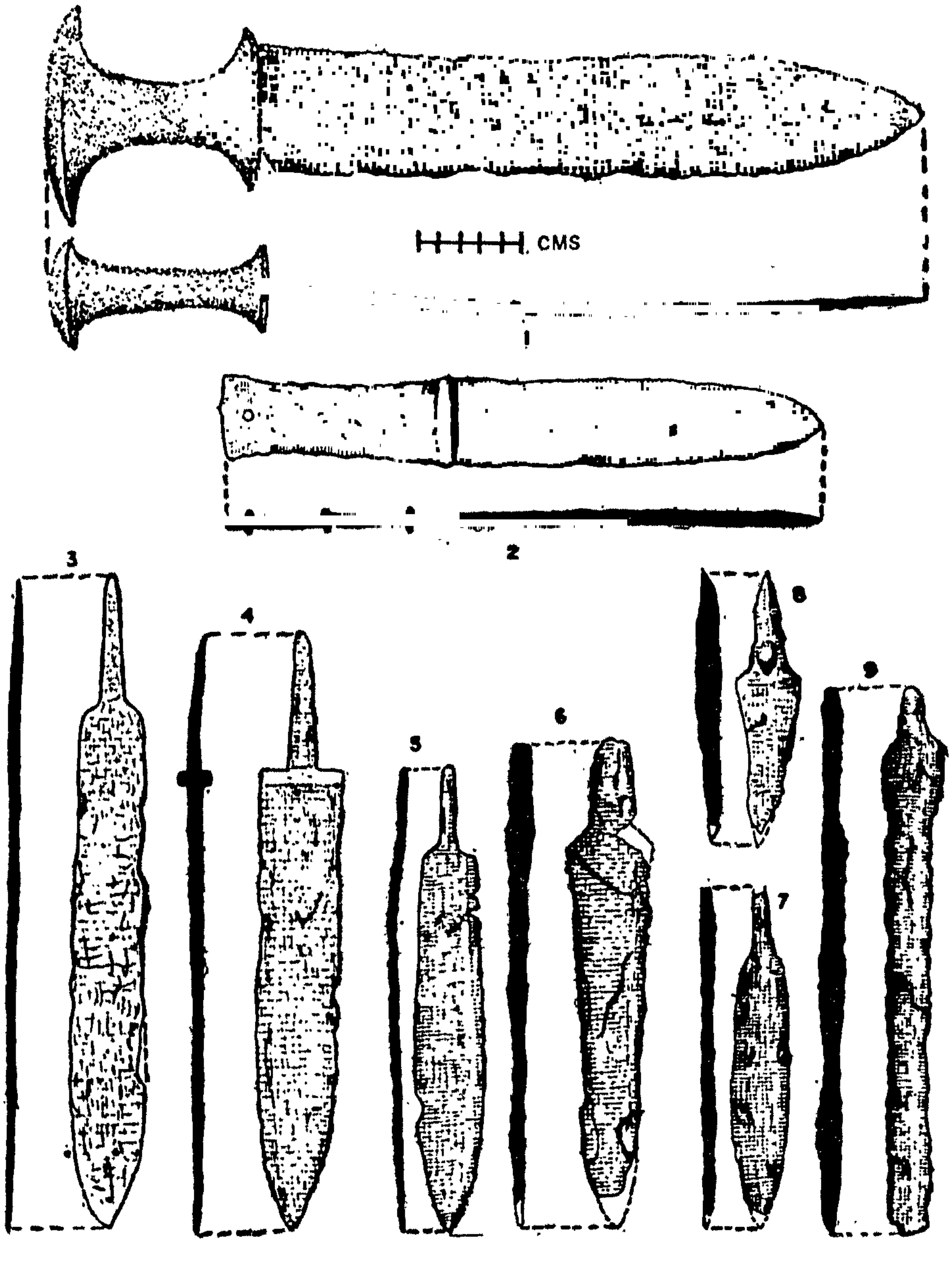

Fig. 38. Iron Objects, Mahurjhari.

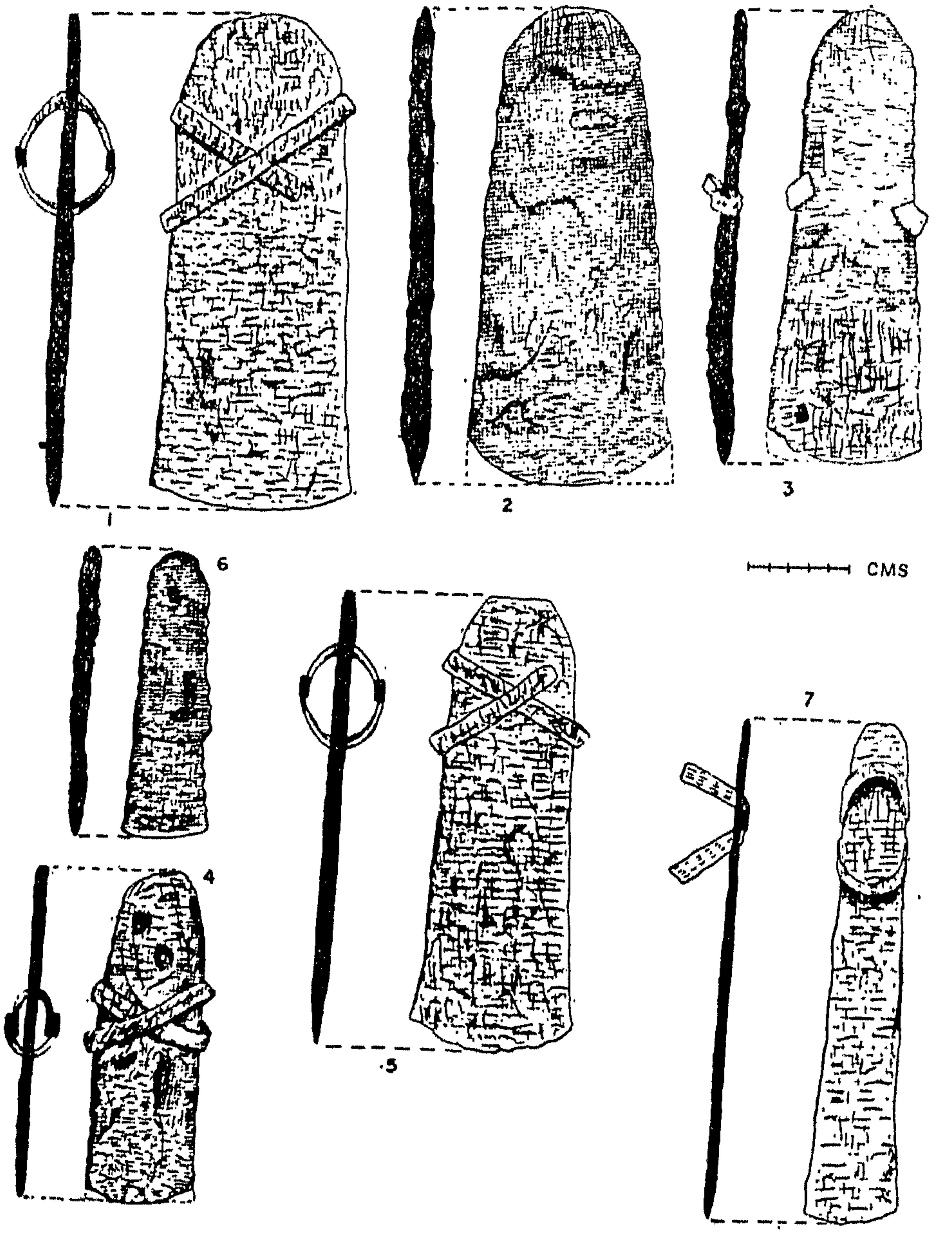

Fig. 39. Iron Axes with iron-ring fasteners, Mahurjhari (After Deo, 1973).

These megalithic monuments, whatever their external shape and contents, seem in our present knowledge to herald not only the Iron Age, that is a period of India's history when the use of iron for tools and weapons became common, but also a time when dated literature begins to be available. Thus with megaliths in one sense prehistory ends and history begins. Though this is largely true, we still do not know how the megalithic people lived, for the instance around Bijapur, Maski, Brahmgiri, Madras, Cochin and Nagpur. No idea of their habitations—

towns or villages—can be had, because no such site has been excavated. Naturally, the authors of these megaliths remain unknown. No reference to these monuments has been traced in Sanskrit or Prakrit literature, though the early Tamil literatre does contain descriptions of these burial practices.

Eastern Neolithic and Chalcolithic Cultures

It need to be believed that the state of culture which was witnessed in the Deccan and South India, and known as Neolithic hitherto, because of the profuse occurrence of ground or polished stone tools—neoliths—was confined to south India only, for neoliths had been occasionally found in the Chhota Nagpur plateau—south Bihar, and southern U.P., western Orissa, now covered by extensive surface laterite, and thick sal forests. Further eastward these tools, some of different type, had been found in the hilly regions of Assam (now called Meghalaya and Arunachal). Recent discoveries have been reported from Kashmir proper, as well as from the Punjab and north-west Frontier Provinces of Pakistan. Superficially, it might be thought that the whole of north India, stretching from Peshawar to Shillong, was one cultural zone where man was just emerging from Early Stone Age life of hunting, fishing and food-collection.

This generalized view is increasingly being proved to be incorrect, as we are getting more and more evidences through excavations, though as yet, except in Kashmir, we are not able to visualize the life of this polished stone-axe man, including characteristics of his houses, food, pots and pans, religion, disposal of the dead and physical features. However, archaeologists have been successful enough to distinguish between the stone tools of Assam and Kashmir on one side, and those of Bihar, U.P., Orissa and Punjab on the other, and say that the former belong to a distinct cultural zone, whereas the latter, particularly from the Chhota Nagpur plateau, when fully known, would more likely belong to the southern Neolithic. It is probable that each part of this region, now split up into various districts of U.P. and Bihar, had developed a slightly different culture depending upon the local environmental and other factors.

Chirand provides the best example for such a conclusion. This site, about 8 km east of Chhapra and situated on the Ganga, is indeed, in the plains. Nobody expected that the huge mound

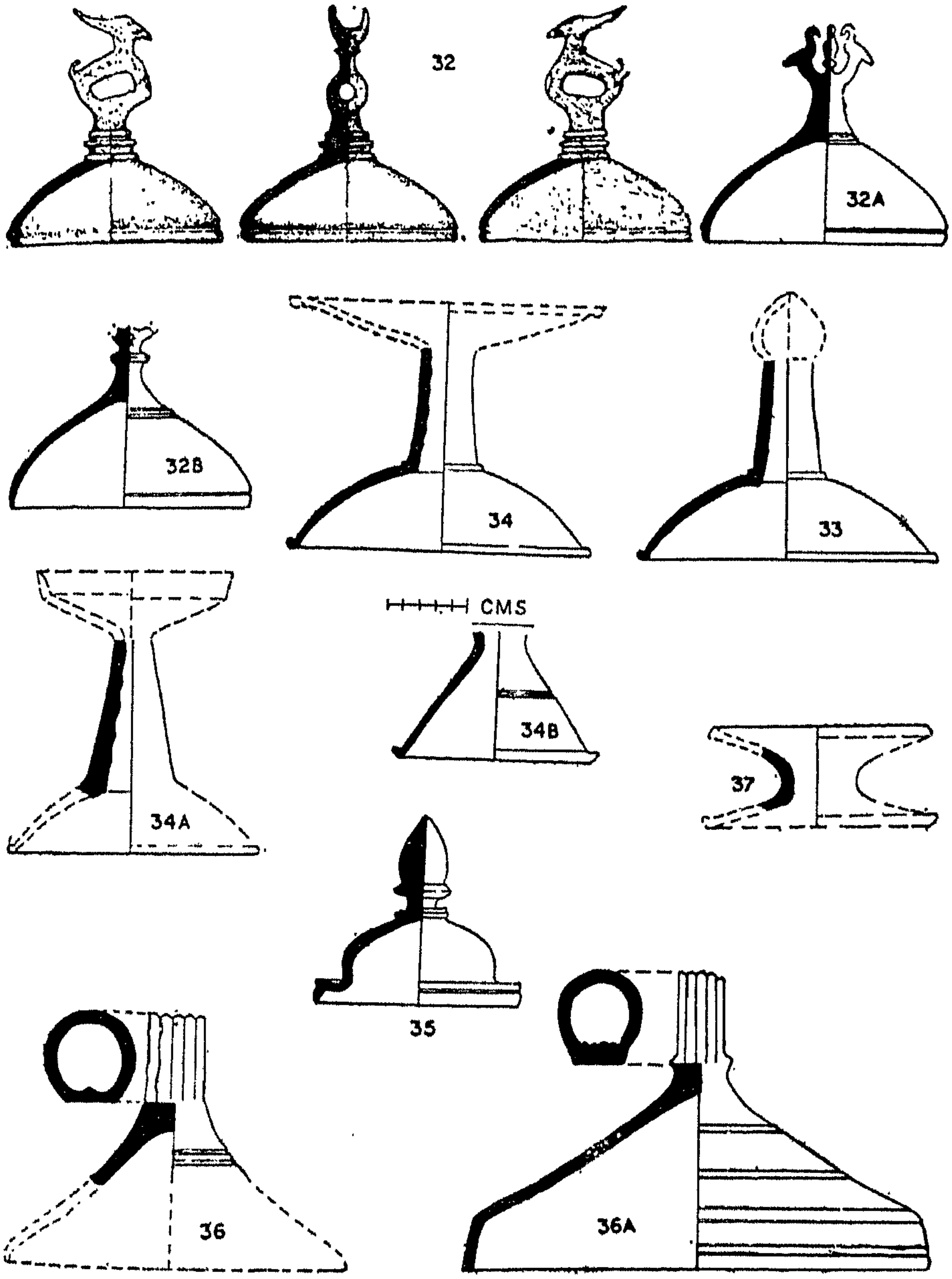

Fig. 40. Distinctive pottery from Mahurjhari (After Deo, 1973).

here goes back, as it does, to *c.* 2500 BC—that is, not less than 2000 years before the Buddha—and that it contains the relics of a man who lived in round, mud and bamboo huts about 2 metres in diameter, with their floors paved. The roofs of these huts were presumably thatched and conical (exactly as they are made today in the vicinity). This man depended for his livelihood on small tools (microliths) as well as bone tools. The latter are much more varied and better than those found in the south. These include: the needle, bodkin, drill, chisels with broad and

narrow ends, picks, side-and-end-scrapers, all made from the long bones of animals and deer antlers. The large stone tools are so far few, whereas the small lunates and points of chalcedony must have been useful for hunting and fishing, after they were inserted into a bone, wood or clay handle. Since the excavations have been so far on a small scale, no exhaustive or full idea can be had of the pots and pans used by the early Chirand Man. Four different fabrics—red, black, black-and-red and grey—might be distinguished. The available shapes included bowl with stand, bowls with perforations, lips and spouts, and small globular vessels. Most of the pots are said to be handmade, though there are examples of vessels made on a turntable. Some vessels bear post-firing ochre paint and a row of hearths was found at a slightly higher level, where a single family or a group of families might have lived. It is said that even now such groups of *chulahs* are found in Bihar.

Besides animal diet, composed of beef, meat, venison and fish, man in Bihar at this time ate rice. Thus the staple diet of the Biharis was already available by about 2500 BC.

Such glimpses of life in south Bihar can be had at Sonepur and in the east at Uriup. But the one revealed at Chirand is, indeed, very interesting, for here in the absence of stone, man had to resort to the manifold uses of bone for hunting, skinning, weaving, stitching and even digging.

Everywhere, man gradually gave up the use of stone tools and took first to copper, bronze and then to iron. That this happened in Bihar, Orissa and Bengal, particularly the western part of the latter, is slowly coming to light, though as yet, because of the smallness of the excavation and even non-publication of the results of the work already done, no clear picture can be had.

Both at Chirand and Sonepur, the prehistoric deposits are overlain by those of the Early Historic period. This is again clearly shown at Pandu Rajar Dhipi and Mahisdal in West Bengal. At the latter site, there is some evidence to say that iron-using people had destroyed the earlier stone—and copper-using cultures.

Whereas Chirand, Sonepur, Uriup and other sites in Bihar give an inkling of the early agricultural and hunting fishing settlement in the Ganga basin, Rajar Dhipi, Mahisdal and several others give us some idea of what was happening in the

valleys of the Ajay, Kunoor, Mayurakshi and others which flow through the lateritic plateau of Chhota Nagpur in the districts of Bhirbhum and Burdwan. There must be many more in other districts and some in the deltaic region as well.

All these indicate the existence of an extensive rice-growing, riverine culture with probably maritime contacts as well as contacts with similar cultures in eastern India and south India. So far the excavations have been very small, hence no idea of the plan and size of the houses or settlement pattern can be had. What we know is that the people had a good stock of pottery, in which we may recognize no less than 13 shapes—such as various kinds of bowls, some even on a stand, some with a flaring channel-spout, others with perforations, dishes, simple as well as on stand, *lotas*, storage jars and basins. Most of this pottery is wheel-made and occurs in three fabrics, black-and-red, lustrous red, often painted in black, and chocolate or buffish ware painted in creamish white. Though all the shapes are not illustrated from the varied repertory of shapes, we have to say that the Rajar Dhipians were sociologically and economically well advanced, whereas vessels like the large channel-spouted bowl might have been used for ritualistic purposes. And if the identification of a terracotta-object from Mahisdal (and also from Chirand) as a realistic phallus is correct, then we may have to regard this as the earliest evidence of linga-worship from eastern India.

Though economically these people were in a Neolithic—that is, early agricultural—stage, still so far only a few polished stone tools have been found, while there do occur a few toilet objects and ornaments of copper, and a long flat copper axe like a bar celt from Mahisdal and a few microlithic tools, among which crested ridge flakes are included but not illustrated.

Burial was the prevailing custom of disposing of the dead. Three types are recorded: extended, fractional or secondary, and urn-burial. The orientation was uniformly east-west, and the burial was probably within the habitation—house floor or courtyard.

Rice, fish and meat of *nilgai*, deer and pig was the staple diet of the people.

This way of life, set in beautiful surroundings—a green foliage, groves of banana, coconut, and *sal* trees, around a small

or big pond and thatched mud-walled huts stacked with heaps of unhusked rice—still survives in west Bengal, and is at least 3,500 years old, as the C-14 dates from Mahisdal tell us. The arrival of iron in a later period did not make a great change in the economic structure of the society or the daily life of the people.

Further eastwards, in Assam, Meghalaya, and Nagaland, it is now becoming certain that we are in a different cultural zone, which has more affinity with south-east Asia.

Assam occupies a peculiar position. On the one hand, it forms the easternmost division of India, geographically, historically, and culturally; on the other, it adjoins China and Burma, and thus, geographically, linguistically and racially, forms a part of south-east Asia. This position is also clearly reflected in Assam's archaeological record. Right through the Early and Middle Stone Ages, when it was not separated from the mainland by the Bay of Bengal it—Meghalaya, at least—had the same kind of stone-tools as Chhota Nagpur plateau. But later, when owing to a geological event the Garo Hills were separated from the mainland, this region came into greater contact with Burma, China and south-east Asia. Both the early inhabitants and the present preliterate tribes like the Garos, Nagas and others with their cultural equipment, seems to have moved into the hilly region from across Burma. While at the moment we have no skeletal material to prove the statement, the main kinds of stone-tools are as follows: edge-ground; pecked and edge-ground; fully ground; grooved hammers; belted or notched pebble hammers; grinding slabs; polishing and sharpening stones; and flat and concave mealing stones. There were several sub-types in the first three. The occurrence of three classes of pottery from a small excavation at Deojoli Hading shows clear influence from China—particularly from Szechwan—and south-east Asia.

This influence is very well seen in the way the stone tools are made and in some of their characteristic shapes. And this is irrespective of the raw material (dolerite, indurated shale, green-stone and sand-stone). This raw material, of course, varies from region to region and accordingly its technique also changes. In the Naga Hills, pecking and grinding are employed for preparing tools out of green-stone, whereas elsewhere, chipping and

partial or overall grinding are common. The last two processes can be easily understood but pecking requires some explanation. Here the rough surface of the proposed tool is smoothed or levelled first by removing the irregularities with a chisel and a hammer, both of stone. All stone masons are familiar with this technique and employ it as and when needed.

Among the tool types, the most characteristic is the shouldered axe. This is, indeed, unknown in the rest of India (though isolated specimens are known as far south as the Godavari Valley), but is common throughout south-east Asia. This tool has a regular tang. Formerly it was believed that this was achieved by cutting it out with a wire. As the use of the wire may presuppose the knowledge of metal, which was unknown, it is now suggested that this cutting was done with a sliver of bamboo and sand.

Besides this unique tool type, the pecked and edge-ground axe of Naga Hills can be compared with the excavated specimens from Yang Shao Taun in Hunan, north China. This evidence of tools is supplemented by the presence of cord-impressed pottery from Deojali Hading.

These various kinds of stone tools were useful for digging, particularly as hoes, for scraping and ordinary wood work. All these were hafted, many having simple strap handle or a handle made with a withy.

However, all this surface material and the excavated evidence from Deojali Hading can become much more significant, if at least one or two sites in the Naga Hills, Arunachal and Meghalaya, all formerly part of Assam, are fully excavated. Excavations in Thailand, which has a similar juxtaposition of submontane and forest areas with small streams and plain country like Brahmaputra valley, have yielded relics from several sites, which not only span a long period of time, roughly from 13,000 BP to 400 AD, but also tell us how man passed from the state of fishing and hunting to that of early cereal agriculture. Some of these sites have given not only ground stone tools and pottery but definite evidence of the growing of rice as early as 6,000 BC. Such a knowledge we sorely miss in Assam. But there is little doubt that its pre-history which hitherto consists of nothing but a few scattered stone-tools can be enlivened if a concerted attempt is made.

The Northern Neolithic Culture

Though the discovery of a rich Neolithic Culture in Kashmir is more than ten years old, it is not possible to give an exhaustive account, because any detailed report or article summarizing such an important work is not yet published. What is given here is based on the brief accounts in *Indian Archaeology—A Review* and a first hand study of the finds in Srinagar and a visit by the present writer to the site of Burzahom, Gurfkral and Martand with Shri T.N. Khazanchi and his colleague Shri Sardarilal. It is due to the courtesy of these scholars that some insight could be had into the most fascinating, but little known, aspect of Kashmir's earliest civilization. For civilization it was, if we take into consideration the location and wide distribution of sites, the deliberate effort in making houses, eking out a livelihood suitable to the environment and thinking about life after death. Except writing, of which we have no evidence so far, these early inhabitants of the Kashmir valley had everything essential for living a comfortable life.

In the Valley of Kashmir there is nothing that is not beautiful, but the sites where man first made a permanent habitation are not only beautiful, but also awe-inspiring and at once remind one of the vastness and grandeur of Nature. Burzahom, Gurfkral and Martand, every one of them is a flat, elevated terrace, locally called *karewa*—geologically the remnants of lake-beds of the early and late Pleistocene times. These *karewa* terraces overlook the green Jhelum valley and are themselves surrounded or overlooked by towering mountain ranges. Thus one can see for miles in one's front and the snow-capped Sankara-Parvati peak behind.

These *karewa* terraces at Burzahom and Gurfkral are found strewn with huge stones, which are foreign and were certainly brought by man who had erected megalithic monuments. Not much is known about this man but of his predecessor(s) we have fairly good knowledge.

Long after the latest flat terraces—the *karewas*—were laid in the Kashmir valley, a man appeared who chose to live on these terraces, and not on the shrinking river banks. The evidence from Burzahom and Martand (not yet published) indicates that instead of building with either mud/clay or stone, the man preferred to scoop out earth from the *karewas*. Thus came into

existence what is called 'pit-dwellings.' These pit-dwellings appear to be irregular in shape, not exactly round, oval, square or rectangular. Those of the earliest phase, called Period I, "were narrow at the top, and wide at the base with a flat floor and side walls occasionally plastered with mud." These pits were provided with landing steps, but as these steps do not take one to the floor of the pit, it is presumed that for further descent a ladder was used.

Post-holes on the periphery of the mouth of the pit were probably meant for constructing a roof with wooden posts and no other superstructure, while the small-sized storage pits on the ground level probably belong to the dwellings of Phase (or Period) II and not to that of Phase I.

So far 16 dwelling pits have been exposed, of which the largest measured 2.74 metres at the top, 4.57 metres at the bottom and 3.96 metres in depth. That these pits were meant for habitation, including cooking, is indicated by bands of ash and charcoal in the pit walls.

For kitchen refuse and storing grain (not yet found) small pits were dug in at ground level, but for storing wood, birch, hay and pots, larger crescent-shaped pits were dug close to the living pits.

Conical shaped, but irregularly dressed leaning stones, 0.91 to 1.51 metres in length and 0.22 to 0.44 metres in width, found in three pits of Phase I as well as in a burial of the megalithic period (II), might have some religious significance. It might be recalled that both at Amri and Kalibangan, small ritual pits have yielded a vertically placed brick. A clay cylinder capped by a flat stone slab was also found in a similar position in the *kunda*—lika structure in the earliest Chalcolithic phase in Nevasa during 1960-61.

The evidence for the succeeding phase of occupation is naturally more, as more extensive area was exposed. The pits used seem to be bigger and rectangular rather than round or oval. The houses were now prepared by plastering the floor of the filled up pits of the earlier phase with mud, and further covered with a thin coat of red ochre. Since the houses were big, mud platforms with partitions were provided; and as the house plans were repeatedly changed (because of destruction by fire, of which there is plenty of evidence), the exposed floors at

several levels are riddled with post-holes. In one trench (about 3.96 × 1.21 metres) at a depth of 2.13 metres below surface, no less than 45 post-holes occur. These houses were provided with hearths and grinding stones with muller.

The inhabitants of the *karewas* primarily depended upon hunting and fishing and whatever naturally growing fruits, vegetables and eatable grasses the valley offered then. However, no exact idea of the animals hunted can be had, unless the bones found in the several storage pits and on the floors of houses are studied. But the presence of ibex, wild dog or wolf and deer is suggested by the skeletons of the first two found intentionally buried in pits and of the latter from refuse found in small storage pits. The intentional burial of the first two might also suggest the love and regard these early Kashmiris had for the animals who helped them in hunting. These animals or their selected bones were buried either separately or deposited with the human skeletons. In one instance are found the skeletal remains of five wild dogs.

So far five human burials of this phase have been noticed. These were found buried in pits which were generally circular or oval on plan and in most of the cases narrow at the top and wide at the base. Their inner sides were often coated with lime.

Four of the human skeletons were found buried in a crouched position. It is not clear whether in these or the Period III burials the interments were both primary and secondary. Since a reference is made to extended articulated skeletons one may think that it refers to the megalithic or Period III, but the caption of the plate mentions Phase II.

Two noteworthy features of the burials of Phase II were the use of red ochre on the bones, and the evidence of trephining (operation on the skull by removing part of bone to relieve pressure on the brain)—seven finished and four unfinished circular holes—on a skull.

The orientation of the human skeleton or the physical type represented is not mentioned.

Initially in Phase I the pottery is not only handmade but the fabric and the surface finish were coarse. Only three shapes—bowl, vase and stem—seem to be represented, but later in Phase II, the types increase and a fine grey or black burnished ware also appears. The repertory of pots and pans at Burzahom now

consists of: (1) hemispherial bowls with a ring base; (2) bowls with outgoing sides, with probably a stand; (3) deep bowls or cups with straight sides or outgoing sides; (4) funnel-mouthed vessels (lower part unknown); (5) small elongated vessels with a bulging belly, cylindrical neck and ring base; (6) large high-necked jar in black and red burnished surfaces; (7) small, wide-mouthed vessel with a beaded rim; (8) a small thick-based dish or plate (usually these are used for kneading dough, though here the vessel is comparatively small); and (9) stand with a triangular perforation and parallel grooves on the body.

A few vessels have mat impressions, which suggest that either the pit, hut or the place where the potter kept their pots had woven floor mats.

Both the ground or polished stone and bone industries are rich and varied. They give an idea of the comparatively sophisticated or complex life of the inhabitants of these high, elevated places.

No details of the ground stone industry have been published. The account given here is based on the first hand study at Srinagar in 1969.

The material is invariably trap from the Pir Panjal. This looks greyish, but assumes a greenish tint when polished. Broadly, the collection falls into: (*a*) heavy duty tools and (*b*) light duty tools.

In each category, there are axes, wedges, chisels, adzes, hoes, perforated pick, harvesters, flake knives, mace-heads and double-pointed poker.

Nowhere in India proper have so many specialized types of bone and ground or polished stone-tools been found. These collectively as well as individually give an insight into the life of the Kashmiri people some 4,000 years ago. Though in the remains of the houses no grains or traces of clothes have been found, one can definitely postulate two things.

First, the high *karewa* inhabitant was not a nomad, living only on fishing and hunting. Though these arts for eking out a livelihood were practised, as the bones of the animals from the kitchen middens would testify, the different kinds of ground stone-tools—particularly the large and small hoes, the shoe-last celt and the harvesters—show that the man needed these tools for various agricultural practices, such as digging, sowing, planting and cutting the grains (which should be rice and millets).

This grain was ground or pounded on stone querns, very probably after soaking overnight in water, and a thick paste-like thing prepared. Such querns were in every house. This meat and cereal food must have been supplemented by a number of vegetables and fruits (an idea of this can be had if the pollens, etc., are gathered by floatation technique). Except the fruits and some of the vegetables, the rest must have been cooked in *chulahs* which were also found in the houses.

These early Kashmiris must have worn clothes made of skins, and probably woven and pressed wool. This inference can be made not only on the general ground of the cold climate of the Kashmir valley, but because of the occurrence, among the bone implements, of large and small points, and needles and scrapers of various kinds among the stone-tools. It might be mentioned that such early bone needles, bodkins (pointless thick needle with large edge) and grooved pokers have been found in Burzahom alone, as far as India is concerned. Their absence in the otherwise rich and extensive Neolithic sites of peninsular India underlines is no uncertain way the near absence of stitched clothes. These skin, fur and woolen clothes might be like those worn by the Central Asian people who have to live a considerable part of the year in very cold, windy, and often ice-covered areas.

The tools as well as certain shapes in pottery give a clue to the likely affinity of this culture with the other and then existing cultures. A very interesting and important clue was supplied by a fine, grooved red ware which was found in the later deposits (Phase II or Period I) at Burzahom. This medium-sized globular vessel bears a painting in black of the head of a goat or moufflon (mountain goat) with long curving horns on either side, within which are rosetters, and the ears are shown pendent. Now an exactly similar figure of a moufflon or a bull is found at Hissar in eastern Iran, as well as at Kot Diji in Sind. I have shown elsewhere that the Hissar figure has been turned into that of a bull at Kot Diji and that the practice or tradition of depicting flowers or rosettes within the incurved horns can be traced from a very early period in Iran. If one compares this motif at Burzahom (where it can be dated to *c.* 1700 BC) with the Hissar and Kot Diji figures, it would appear that it has a greatar resemblance to the one from Iran than to the other from Sind. The

reasons are obvious. The contact with Iran might have been through Baramulla (ancient Varahamala) along the Jhelum to Peshawar, and through Swat and Afghanistan (Kapisa and Bamiyan), or through Kashgar and thence along the Silk Route to Iran. An important link in this connection has been provided by a similar painted head from Gumla in NWFP. This contact with Iran and central Asia, which might have been sporadic, was maintained throughout the historic times and the present Iranianization of the Valley proper was done by the Mughals, specially Jehangir and Nurjahan.

This picture of prehistoric contact with Iran and central Asia on the one side and China on the other, will become more clear as more details become available through excavations. At the moment we can only visualize a number of such Neolithic settlements, partly overground and partly underground, dotted over the flat, elevated *karewa* beds throughout the Kashmir valley. Of these, Burzahom has been known for some time past, but some more have been found lately, such as Gurfkral near Avantipur and Martand, which have been seen by the present writer. Both these sites are situated in very beautiful surroundings.

How these early settlements gradually took to fine wheel-made pottery and the use of copper, as the deposits of Period II and later at Burzahom suggest, or whether the house pattern changed is not known. Then at some time before Buddhism penetrated the valley under Ashoka Maurya, a new people seem to have spread over the valley, about whom not much is known except that they erected large stones either as memorials to the dead or as part of the burial itself. Nothing more than a few standing stones are found at Burzahom and Gurfkral.

The Copper Hoard Culture

In the gradually developing time-table, we are not yet able to place the so-called 'Copper Hoards,' which in western Uttar Pradesh might now be associated with the ochre-coloured pottery. Still in the eastern region, some objects—massive axes, harpoons, daggers and even swords—all mostly of pure copper, are without any chronological and cultural setting. These tools and weapons might have been made by itinerant smiths, as had been their custom until very recently. But the people, for which

they made these objects, could not have been of itinerant nature. These people must have settled in big and small villages and needed such massive tools/weapons for their livelihood, of which, unfortunately, we have no record so far.

This view has now been confirmed by the small excavations, one at Lal Qila and the other at Saipai, both in western U.P. Further, excavations in 1969-70 at Lal Quila, District Bulandshahr, brought to light "a fairly extensive clay-plastered floor, reinforced with horizontally-laid potsherds rammed in earth and containing a series of post-holes. Adjacent to this floor and under a mud-brick debris were found a few regular-laid sun-dried bricks and showing a mud mortar and, in the west, a platform-like structure made of rammed earth. A few baked bricks were also noticed."

These people, thus, were not nomads but lived, unlike the people in central India, Maharashtra and south India, in houses which were built with sun-dried and baked bricks.

That these were the 'Copper Hoarders' is also proved by the discovery of copper objects in association with the ochre colour ware at Lal Quila, while at Kiratpur, about 3 km from Lal Quila, was found a Copper Hoard containing an anthropomorphic figure, two copper celts, one of which had a five-pointed star incised on it, and copper bangles (*IA-R*, 1969-70, 1972, p. 38).

The excavation also yielded wheel-made painted pottery, which is ochrous to brownish in colour, due to a red slip which has flaked off at times. But the ware is sturdy and includes such shapes as vases (or vessels with a globular body and outturned rim; some of these have a strap on the shoulder). Then there are bowls in various sizes and shapes, and some show traces of separate legs, attached to the base. There was also the dish-on-stand, but found in fragments so far.

Among copper objects may be mentioned a broken celt, an arrowhead, a pendent and beads.

Numerous terracotta objects—female figures, bangles, marbles, beads, toy wheels, shallow querns and rubber stones, skin rubber and a net-sinker—show unmistakably that the inhabitants were not nomads but had manifold needs in life.

Many of these antiquities require a detailed, careful study. For instance, the terracotta bead with seven stars on one side and six on the other reminds us of the similar incised beads from

Ahar. So also is the case of the terracotta female with a receding forehead and prominent breasts, which is quite different from other early female terracottas. Thus slowly we are having an insight into the life of the Ochre Coloured Ware people, whose time, according to the thermolumini scence dating would be about 1800 BC.

Saipai, a site in the Etawah District, also yielded some positive evidence about the habitation of the Ochre Coloured Ware people and their relation to the Copper Hoards. A harpoon was found within the thin deposit (about a metre) at a depth of 45 cm below surface; in addition, along with ochrous pottery, was found another having a red slip and paintings in black. Noteworthy types include jars with flaring rim, and bowls and basins, some with handles and spouts. The dish-on-stand specimens also seem to be there. Equally remarkable is the incised decoration consisting of rows of dots or dashes or a series of triangular compartments enclosing rows of dashes.

That these people were in a Stone Age is proved by the presence of a chert blade and a chalcedony flake, whereas balls, pounders, rubbers and querns show that their daily life was not in any way different from the other Chalcolithic folk. Their houses were presumably of wattle-and-daub, but there is a suggestion that, as at Lal Quila, kiln-burnt bricks were known. If this is proved in further excavations, then the occurrence of a chert blade along with the black painted red ware should make us inquire how this culture differed from the Harappan, as the pottery is said to be different (*Indian Archaeology—A Review, 1970-71, 1-75,* cyclostyled copy).

CHAPTER 5

CONCLUSIONS

WE HAVE sketched in the earlier section of this book the history of the origin and development (and at times decline) of civilization of India. Of the various aspects of this indefinable concept only two were repeatedly stressed or kept in the forefront of our discussion. The first was that we had only remains of the material culture of the period. It was primarily the history of objects. Not things spiritual, but such things as social, political and economic organizations were rarely touched or referred to.

The second point which was often stressed was that in the present state of our knowledge many of the basic ideas or techniques in the development of the material culture had their origin or earlier beginnings in western Asia and Europe. From here either the ideas, or sometimes the bearers of these ideas as well, gradually travelled to India. This process has to be called 'Colonization,' using, of course, this much maligned word in a good sense.

This assumption or statement can be challenged by some who may ask whether we think that in India there were no people of Indian origin properly speaking, that India was largely uninhabited, that throughout its long history we cannot but postulate the arrival of outside influences for the existence of this or that object.

These questions are, indeed, natural and relevant, particularly in a country like India, having a long and rich tradition of cultures, of which written records are available only from about the 3rd century BC.

A brief consideration of this literary tradition and its relation

to archaeology is necessay, though because of the inadequacy of records in both these fields, it is not possible to reach any definite conclusion.

The literary tradition is of two kinds: Vedic and Puranic. In addition, we must take into account the ethnological tradition. For whether we accept the Puranic accounts or not, according to the ethnological history, many of the areas where earlier cultures have been discovered were the home of primitive or preliterate tribes.

Earlier writers like F.E. Pargitar thought that the Vedic and Puranic traditions belonged to two different classes of people in the Aryan society, namely, the brahmanas and kshatriyas respectively and therefore, they presented two different pictures of the development and spread of the Aryan kingdoms in India.

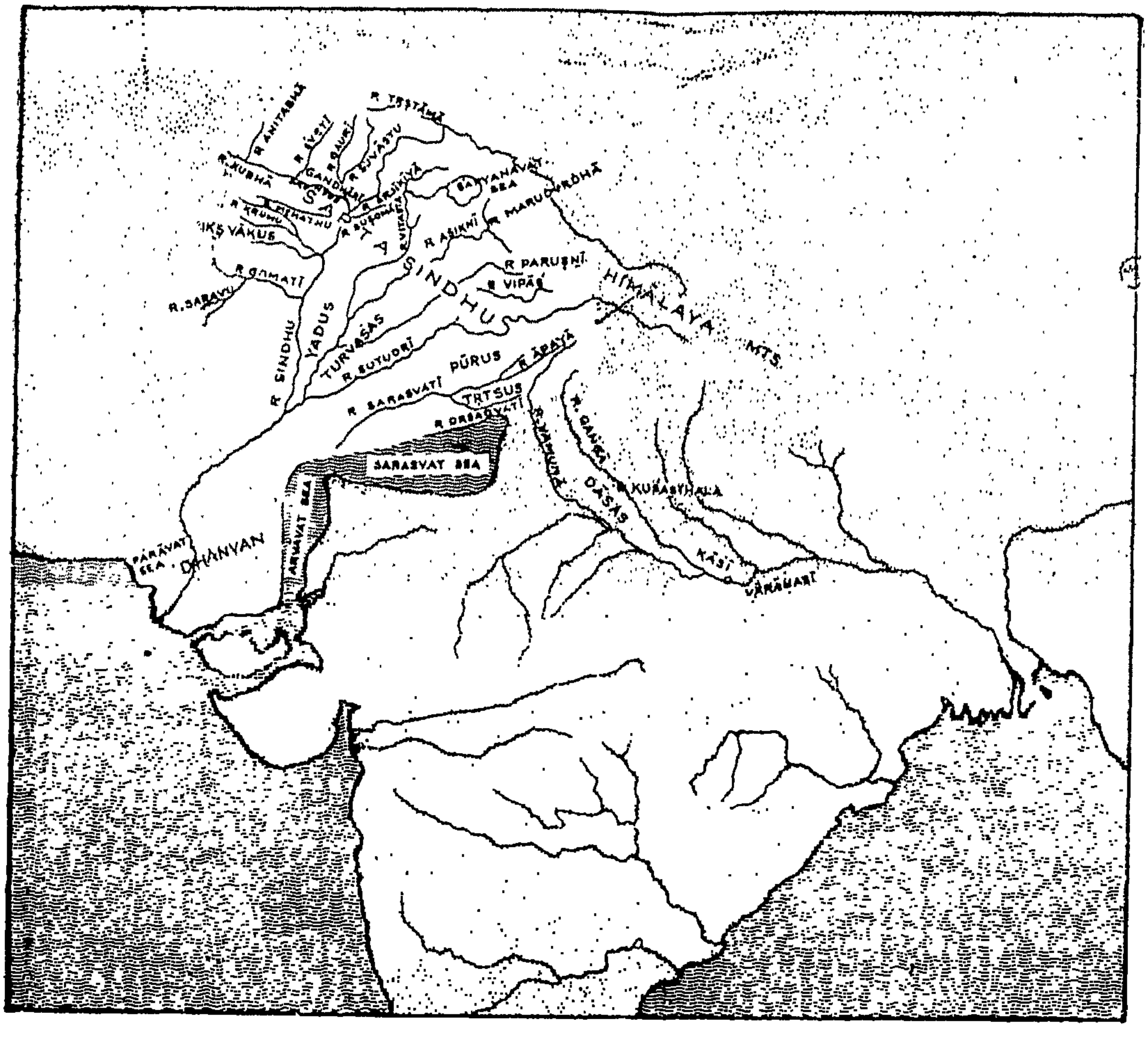

Fig. 41. Map showing Colonization according to Vedic evidence. (After Bhargava)

However, later scholars like Pradhan and Bhargava think that there is not much variance between the Vedic and the Puranic traditions, which, with a little effort and analysis, could be seen as related to each other. But while attempting to prove this relationship, little attention has so far been paid to the ethnological tradition, and above all to the actual facts of the case, that is archaeology. But since some knowledge—and that too in a very small measure—has come to light only during the last 20 years or so, no thorough comparison between the literary archaeological evidences can be attempted at this stage.

The Vedic tradition mentions tribes or peoples among the Aryans and non-Aryans with their prominent kings or chiefs. It does not give a regular genealogy of any particular family or dynasty. Map I shows India as it should have been, according to consensus of opinion, in Vedic times (*c.* 3000 BC—700 BC).

The social, political, economic and cultural life of this period may be reconstructed from an analytical and synthetic study of various details scattered throughout this vast literature spread over at least a thousand years, if not more.

Before we combine this knowledge with that gained from the Puranas, it is necessary to point out that while the Vedic literature is believed to be little contaminated by later interpolations, the sizes of the Puranas and the two epics, the *Ramayana* and the *Mahabharata*, have been regularly inflated. How this inflation, for example, has affected the *Ramayana* has been shown by the present writer elsewhere. What we have to remember is that even the critical editions of the *Ramayana* and the *Mahabharata* are not original epics but their redactions in about the 5th century AD. This point has an important bearing upon the correlation between the Vedic and Puranic accounts. For instance, a scholar thinks that Rama who belonged to the Ikshvaku dynasty of Ayodhya had crossed the whole of south India and conquered Ceylon (Sri Lanka). A critical study of *Ramayana* has shown that Rama had not gone beyond the Narmada.

Under the circumstances, what we might do is to show the approximate positions of the various tribes or people mentioned in the Vedic literature as well as in the two epics and the Puranas, and indicate briefly the social, economic and cultural conditions as reflected in this literary tradition.

The Vedic literature spans a period of at least a thousand years. Naturally, it reflects the development of various political, social and economic conditions throughout this long time. The picture presented is a gradual extension of Aryan kingdoms from the north, north-west to the east, from the Punjab and north-west Frontier Provinces across U.P. into Bihar and then a gradual migration across Madhya Pradesh to Vidarbha and Saurashtra. The south (Andhra, Karnataka, Kerala and Tamil Nadu) does not figure as such in this political and cultural diffusion.

Politically, no clear idea can be had of these kingdoms because, excepting their capitals, no other place is mentioned. Nor can we have an idea of the social and economic conditions, except a very general one, namely, that the inhabitants of this or that kingdom had a king who belonged to some well-known family and that some people lived on agriculture and animal husbandry or that barter was the accepted method of exchange of commodities and that while metals like copper and gold were known, coined money was still to make its appearance. Among the wheeled carriages was the cart, while the weapons most commonly used were the bow and the arrow, the sword and the spear, the mace and the sling stone; the warriors often rode on horseback and on a chariot. In the epics and in the Puranas this picture does not materially change. We do now hear of cities which were fortified, had well-aligned streets with several types of houses which were known by various names.

However, the picture that is presented is not necessarily of the society when the Puranas were first composed but of the time when they were reduced to writing. My study indicates that all the Puranas and the epics which we have today belong to the Iron Age, that is, they reflect the conditions in India after the 7th century BC and most probably after the 5th century AD. Thus, for our comparative study the Puranic details are not much relevant, except the names of dynasties and their approximate geographical location and capitals. According to the Puranas, the Map (II) of north India, about the 7th century BC should be as shown.

The Vedic as well as the Puranic literature mentions very casually *dasas*, *dasyus*, noseless people, Nishadas, Kiratas and Nagas. The early inscriptions refer to donations to Buddhist establishments such as caves and stupas by the Nagas; some-

times Naga families are also sculptured in Buddhist caves. Thus there is little doubt about the existence of a people known as

Fig. 42. Map showing "Colonization" according to Puranic evidence. (After Pargiter)

the Nagas in large parts of Madhya Pradesh and parts of Maharashtra, Andhra and Karnataka. There is a solitary reference to a Gond in a 5th century AD inscription; a reference to the Nishadas and Kiratas occurs in a 2nd century AD inscription. But we know from the distribution of these tribes as well as references in folk literature that Bhils lived and continue to live in many parts of Rajasthan, Gujarat, central India and the Deccan, whereas preliterate tribes such as the Gonds, Baigas, Savaras etc. inhabit Central India and the Chhota Nagpur plateau. The Chenchus, Boyas and several other tribes live even today in Andhra, Karnataka, Kerala and Tamil Nadu.

It is against this distribution of the Vedic and Puranic kingdoms, as well as the location of preliterate tribes such as Bhils

and the Gonds and the known existence of the Nagas in Madhya Pradesh and perhaps Uttar Pradesh (if we are to believe the *Mahabharata* account of the burning of the Khandavavana by Arjuna) that we have to discuss the authorship of the various Chalcolithic cultures beginning with the pre-Harappan, Harappan and post-Harappan in India.

We cannot enter into a detailed examination of Professor Bhargava's attempted interpretation of the synchronism of Vedic and Puranic evidences. According to him, the Aryans descended into the Panchanada (Punjab) by about 3000 BC and were driven to this place by a huge flood. This new country was later

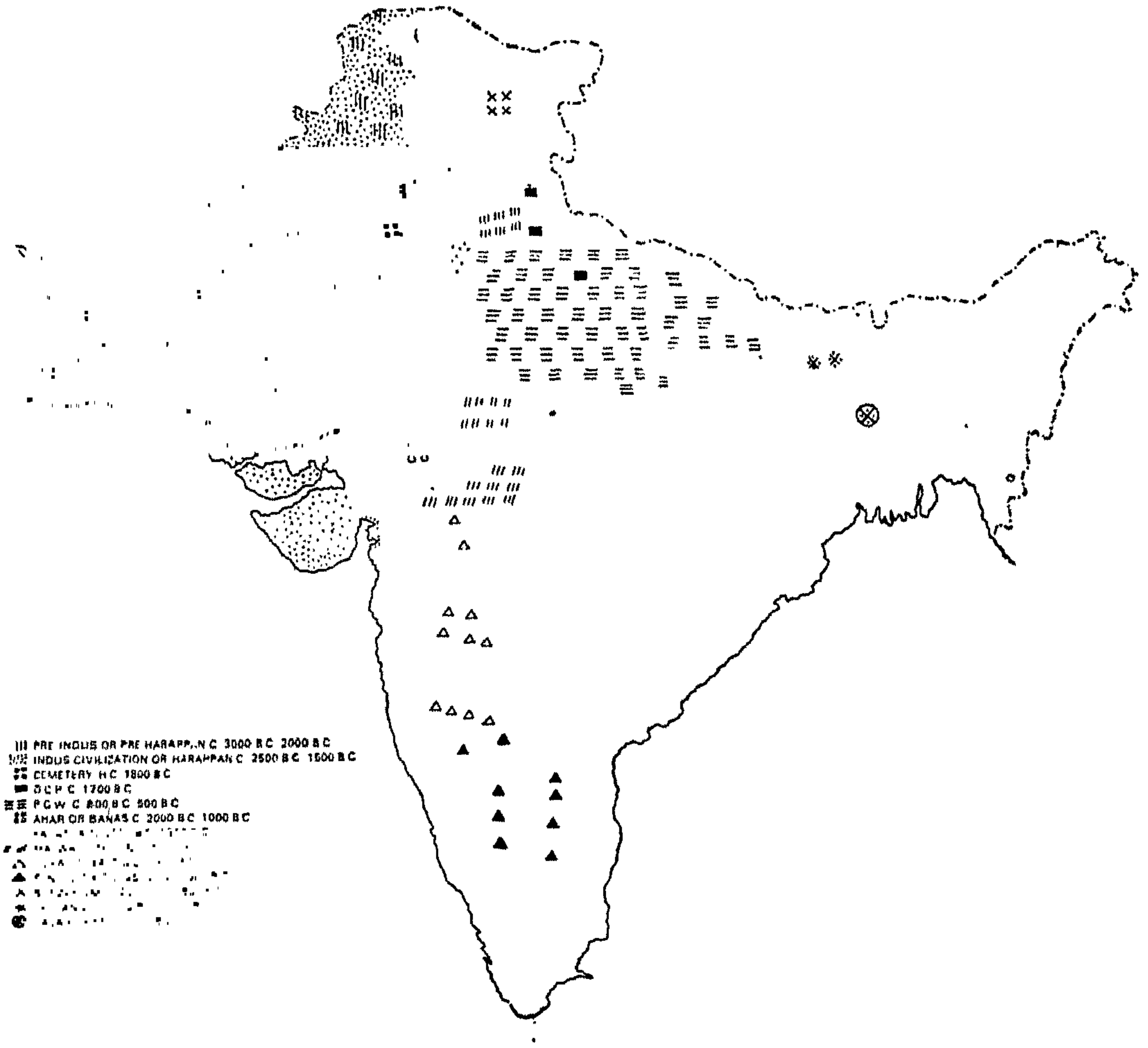

Fig. 43. Map showing Colonization according to Archaeological evidence.

named Saptasindhu. The leader of the Aryan tribes was Manu Vaivasvata. Though the Aryans "soon spread up to the banks of holy Sarasvati," it took them more than 500 years (25 gene-

rations) to expand further into Uttar Pradesh, that is the Ganga-Yamuna doab. This was due to the fact that there was strong resistance from the non-Aryans or pre-Aryan people, namely the *dasas*, some of whom possessed a fairly high degree of civilization and were probably the authors of the Indus civilization.

According to Bhargava, the earliest Aryan kingdoms were founded by four kings: Ikshvaku, Pramshu, Sudyumna and Sharyata. By about 2250 BC these original four kingdoms, the limits and further details of which are not precisely known, had developed into many sub-kingdoms, probably by mixing with the original inhabitants.

However, it has to be noted that except Kashi in the east, the whole of the west coast, including Sindh, Kutch and Saurashtra and the country south of Gwalior or Delhi was unknown to the Aryans!

Archaeologically, how far can we support this account based on Vedic and Puranic data? Accepting this interpretation, if we were to identify the various cultures thrown up by archaeology, the following hypotheses could be considered.

Perhaps the earliest Baluchi cultures like Kile Gul Mohammed were Aryan and that the well-established pre-Harappan cultures at Kot Diji, Kalibangan and Harappa were pre-Aryan, assuming that Indus civilization was non-Aryan or pre-Aryan.

Or

The early Baluchi Cultures and the pre-Harappan Cultures were non-Aryan and the Indus civilization Aryan.

Or

Taking into consideration the spread of the Indus civilization and the probable expanse of the Vedic kingdoms in *c.* 2250 BC, one might equate the Indus civilization with the Vedic.

In any case, the presence of the Kashi kingdom cannot be explained. We have to assume further that the various Gangetic cultures, hitherto barely known, such as Chirand, Sonepur, Uriup in Bihar and Lal Qila and Atranjikhera in Uttar Pradesh were later Vedic cultures and that the Aryans had not spread into Central India and the Deccan. Hence what has been discovered hitherto, namely Kayatha, Navdatoli, Prakash and Jorwe Cultures as well as the whole of the Brahmagiri complex,

would be purely pre-Aryan.

However, we have no archaeological evidence to substantiate the further eastward advance of the Aryans into the Ganga-Yamuna doab. For instance, there is no evidence of any such advance by Bharata, son of Dushyanta, in *c.* 2500 BC, though Bhargava mentions that he did not found any kingdom there.

Then Janhu established Kanyakubja, the first Aryan kingdom in the east. The town of Kanyakubja was also known as Kushasthala after his descendant Kusha.

Another descendant of Bharata founded Kashi with its capital Varanasi. This is said to have been built by King Divodasa and was later captured from him by the Haihaya Yadava.

Dr. Sita Nath Pradhan[1] has sought to clarify some conflicting genealogical accounts found in the Vedas and the Puranas. He felt that the Vedas did not primarily deal with royal dynasties and expansion of the Aryans, as did the Puranas. From such a study he came to the important conclusion that the Rigvedic Aryans had colonized not only the Punjab and the Ganga-Yamuna doab, but southern Kosala, Chedi, Dasharna, Nishada and Vidarbha as well! This period should be considered as early, because, according to him, the *Mahabharata* war was fought in about 1152 BC.[2] However, unlike Bhargava and other scholars, he dates the famous battle of the Ten Kings to about 1470 BC and Rama's invasion of Lanka to about 1450 BC.

There is no evidence to prove the veracity of the dates given by Pradhan, though his thesis may provide some comfort to those of us who are inclined to regard the Chalcolithic settlements as Aryan. Relying on Pradhan's identification, we might even name the various settlements after the Vedic-Puranic dynasties! But one should note that even in Pradhan's very liberal interpretation of this disputed subject, there is no mention of the Aryans in northern Maharashtra. So the Jorwe and pre-Jorwe Cultures of the Godavari-Krishna basins still remain unidentified with the literary data.

In any case, the southern Neolithic and its later manifestation would lie outside the Aryan expansion and will have to be

[1]Pradhan, Sita Nath, *Chronology of Ancient India,* Calcutta, 1927, p. 202.

[2]ibid, p. 260.

regarded as pre-Aryan.

After collating all the 18 Puranas and synchronizing names or lists of their important kings with the Vedic data, Pargiter put forward the theory that the Aryans were autochthonous and that the earliest home of the Aryans was Pratisthana, known later as Prayag, near Allahabad. From here the sons of Manu Vaivasvata spread out in different directions. Ikshvaku, the eldest and the chief son, gained Madhyadesa and became the founder of the Suryavamsha, with its capital at Ayodhya. He had five sons; Yadu, Tuarvasu, Druhyu, Anu and Puru. Yadu ruled the south-west, Turvasu the south-east, Druhyu the west and Anu the north. Yadu's realm lay in the country watered by the river Chambal (Charmanavati), Betwa (Vetravati) and Ken (Suktmati), while Druhyu ruled the country west of the Jamuna and north of the Chambal, Anu the northern parts of the Ganga-Yamuna and Turvasu the territory around Rewa.

The further development about Yadu's descendants is interesting and relevant to our inquiry. It was divided into two branches, the Haihayas and Yadavas. The latter ruled the northern portion of Yadu's territory and the former the southern, particularly later accounts associate the Haihayas with the foundation of a kingdom at Mahishmati on the Narmada. It is not necessary to describe further how Manu's four sons and their descendants occupied northern and western India. For our present purpose it would be enough if we reproduce Pargiter's map and discuss how far this traditional colonization of India coincides with that reconstructed with the help of archaeology. At the outset, it should be immediately made clear that the deepest layers of Kausambi are barely exposed and that of Kasi, Kanyakubja, Ayodhya and Mithila not at all. So that we cannot say emphatically that here in mid-eastern India civilization could have or not have arisen and that this could not have been earlier than in the north and north-western India. At the moment the earliest traces of civilization have been found in Baluchistan and Afghanistan and they show distinct affinities with those of Iran and western Asia. So to this extent Pargiter's theory remains unsubstantiated and even contradicted.

However, it might be held that Pargiter's views about the subsequent development of civilization are perhaps more to the point and that probably we might associate the Haihayas with

the Maheshwar-Navdatoli Chalcolithic Culture and the Yadavas with that of Kayatha.

We have thus three or four views about the colonization of India by Aryans. Of these, the majority view regards them as outsiders, while Pargiter alone holds the view that Aryans were indigenous to India. All the scholars are unanimous in their views that Aryans or Vedic and Puranic tribes or people gradually spread first in northern India, either from north and north-west to east and south, or from the mid-eastern region to further east, west, south-west and north-west and that the Deccan and south India were colonized much later.

This view of the spread of colonization in India, therefore, is not essentially different from that deduced from archaeology. But while we cannot fully visualize what the nature or content of this colonization was—except knowing a string of names of kings and occasionally of queens and of the family priests—archaeology enables us to have a glimpse of how the people lived in various parts of India, though so far it has not told us who those people were. We are left to guess about their identity from their physical and cultural remains. In any case, the evidence is quite inadequate.

Another idigenous source from which civilization might have developed are the various pre-literate tribes. Our limited investigations have so far not shown much relationship between these people and the archaeological evidence. In three areas—in south-east Rajasthan, central India and parts of Andhra and Karnataka—some work has been done by us. However, one must keep in mind what the physical anthropologists have deduced from the few human skeletal remains. This line of investigation, what I call ethno-archaeology, has to be diligently pursued. In addition to tribal populations, this line of work would also take into account the life-ways of societies yet to come under urbanization. Such a study is extremely useful to our understanding not only of food-producing communities but of the distant food-collecting cultures as well.

Hence, there is immense scope for further investigation both in literary prehistory as well as in archaeological prehistory. Unless one or other succeeds in obtaining more data, this kind of speculative study will continue but may it be said that it will not do to pursue only one line of investigation. India is one

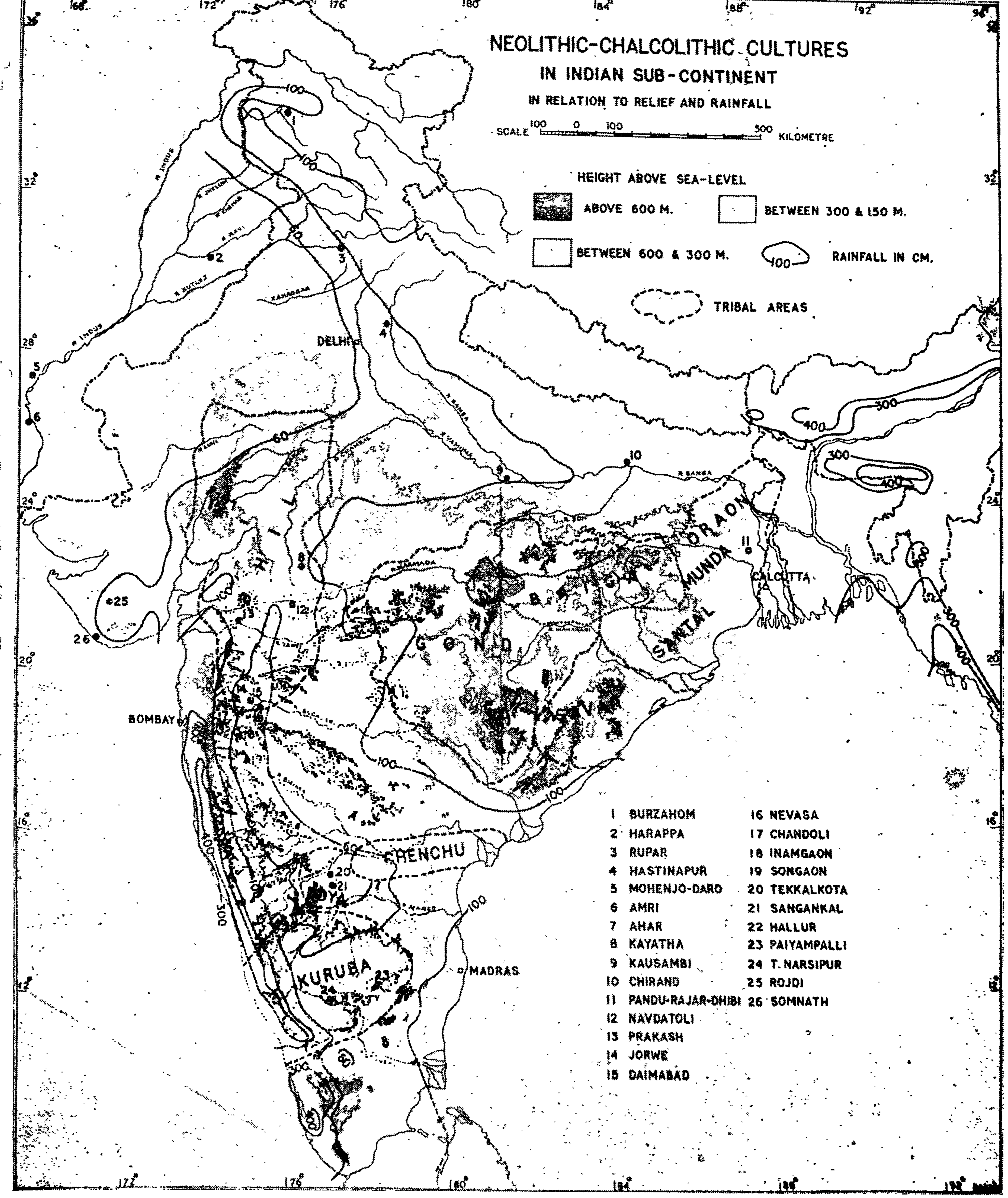

Fig. 46. Neolithic and Chalcolithic Culture in relation to relief, rainfall and the main primitive tribes.

[*to face* p. 181.

country where the most ancient past—its beliefs, practices, traditions—lives with the present. When and where the past will be enlivened by the present is not known. Hence archaeology in India has to be ever vigilant, and eternally expectant.

Whatever may be the final conclusion about the share of the indigenous people or of the foreigners in the development of civilization in India, the main lines of development have now become clear:

(i) For a very very long time, for some hundreds of thousand years man in India, as in other parts of the world, remained a nomad, with hunting and gathering-collecting forming the basis of his subsistence. No doubt, he improved the methods of collecting the food and this is well documented by archaeology in India, as in Europe, Africa and Asia. This long stretch of time is called the 'Stone Age' or 'Pre-historic Period.' Definite evidence about the change in the methods of obtaining food, by domestication of animals and raising of crops and a more settled way of life, is available comparatively late in India. Likewise, we have no data, as in Europe and in western Asia and in parts of Africa, how man became increasingly aware of various faculties, particularly speech, and the faculty of thinking. Nor do we have any evidence whatsoever of the physical development of man right from the Early Stone Age to Late Stone Age.

Whatever be the progress, this progress was slow and steady and then we behold the sudden emergence of a city-civilization in the whole of western and north-western India, what is today called Afghanistan, Baluchistan, Punjab, Sind, Kutch and Saurashtra. The rest of India at this time was experiencing the first fruits of a more settled and independent way of life, known in the archaeological jargon as Neolithic and Chalcolithic. Whether it was thoroughly indigenous or due partly to the arrival of ideas or people from outside, is not exactly known. Finally, we have the Iron Age stretching into the early centuries of the Christian era. Apart from the mastery of iron metallurgy this period is characterised by the raising of distinctive burial structures in honour of the dead.

THE PAINTED GREY WARE AND THE MAHABHARATA

FOR A time, it appeared that the blank or the dark period, between the Indus Civilization and the Early Historic Period would be filled up or the darkness removed by the discovery of the Painted Grey Ware Culture. Initially found at Ahichchhatra and later at Hastinapur, its rapidly filled up distribution map appeared very significant. For the first time, the small and big places—towns and villages—mentioned in the *Mahabharata* seemed to be truly living. Their antiquity was being established for the first time!! But the archaeologist and the laymen were once again disappointed. The former because after probing the depths of Hastinapur and Ahichchhatra, little was done to tell us about the sociological background of the people, their houses, the layout of their settlement, habits, customs and manners, and disposal of the dead. It is more than 20 years since the first discoveries were made, but the knowledge we have of the Painted Grey Ware Culture can be told in a few sentences. The laymen (and scholar) were also disappointed, because, neither the original estimate based on depth of the deposits and relative dating nor the subsequent Carbon-14 dates from Hastinapur and other sites proved the culture to be older than 7th-8th century BC, at the most. Popular mind, even of the educated Indian, cannot imagine that the authors of Painted Grey Ware Culture whom the archaeologists seem to associate with the *Mahabharata* heroes—the Pandavas, Kauravas, and Shri Krishna—should have lived only 2700 years ago and not 5000 years ago!! Disappointing in every way is

the little knowledge that we have of this culture, whom one author dubs as the 'Ganges Civilization.' For except the wide distribution—from Punjab in the north, to Ujjain in the south, and Bahawalpur in the west on north Rajasthan and Sind border to Bihar in the east—that is covering the Indo-Gangetic plains, the Vedic and Upanishadic Aryavarta and Brahmarshidesa it has little to boast of by way of civilization. So far no writing has been found, though material for doing so, may be seen in the double-pointed bone points (styluses), though these might have been used alternatively for weaving or as arrowheads; nor any monumental architecture. Even the size of a room of a modest house, whether made of mud or mud-bricks is not known. But structures of true bricks were probably known, as the occurrence of a fragmentary piece from a pit indicates.

The inhabitants of such mud-plastered reed houses ate rice (and perhaps lentil), but supplemented it with beef, pork, mutton and venison and even horse's flesh. This is indicated by the occurrence of large quantities of bones of these animals, which bear cut-marks and are also charred. Naturally, as today, in communities depending upon agriculture and animal husbandry, the cow/ox, buffalo, pig, goat/sheep, horse were domesticated and used as draft animals and also for food (when useless). (In a future excavation this point can be cleared, if the bones found are proved to be of old animals only, and not of young ones).

Wheat should also have been eaten, as it is the staple diet of Haryana today and known from much earlier times, in the Punjab, Sind, Madhya Pradesh and Maharashtra.

All this food—vegetarian and non-vegetarian—was eaten in bowls and dishes which were quite different from those hitherto known in India.

Though common, yet most distinctive, were bowls and dishes which had fine ashy surfaces and paintings like the svastikas and simple strokes in black or chocolate drawn on them before firing. The shapes lack variety, but the *thali* (dish) and *katora* (bowl) seem to have been found so useful, that all these 2500 years and more, these two have continued to form an essential feature in any Indian kitchen.

The 16 illustrated specimens constitute only one type of bowl—a large bowl, about 3 to 8 inches broad, and about 3 to 6

inches tall or high, with almost straight sides. Such deep bowls would be useful for serving and, storing food, and eating therefrom, even putting right on the lips, but not for pouring liquid, for they have no rim at all. Even for holding with the hand, it is a little inconvenient. The other variety of the bowl had a more rounded base, and curved semi-circular sides. One has a slightly constricted waist (or sides), and outgoing sides. The majority of the dishes have a broad, flat base, and low, slightly curved sides. This form of the *thali* has been found useful for dry as well as semi-liquid food, but not only liquids.

In two varieties, the sides of the *thali* are straight and go out, whereas in another, the sides are indented or have ledges and bear a punched decoration outside. These are indeed quite novel features. Probably these vessels with one or two corrugations outside were meant not for eating as much as for storing, and the ledges were probably meant for reoeiving a lid. So far only one *lota*—a small vessel for serving water for drinking and washing—had been found in the Painted Grey Ware deposits. But a few occur in the red ware at Rupar.

A glance at these, as well as those from the Harappan or the Indus Civilization, as also those from the Chalcolithic cultures of Central India, Maharashtra and Rajasthan would show (even to a layman), that the Painted Grey Ware truly represents the ancestors of a form of life seen in the Hindus of northern India, particularly the Gangetic Valley. Its three ordinary coarse, pottery—distinctive—as well as red, bright red, fine black, does not include any exotic forms or forms like the dish-on-stand, pots wiih spouts of a peculiar nature, barring of course, a solitary specimen of a grooved grey ware stem, and the small feeding cup.

Cooking was done on simple one-mouthed *chulah* with horseshoe like sides. Unfortunately, none of these is illustrated. It is also strange that so many hearths should occur together. Since they were found in the upper levels, where iron ore and slag were found, it is conceivable that some of these hearths, as at Ahar, were meant for smelting iron.

The residents of these simple, mud-walled houses wore ornaments—necklaces, pendants, ear-rings and bangles—made of semi-precious stones (chert, agate, jasper, carnelian) and bone, terracotta (discs, simple and decorated), cylindrical objects of

chert and jasper, and glass bangles. Spinning was done on one- and two-holed terracotta discs. And the clothes (to judge from the sculptural evidence of a slightly later period) must have consisted primarily of a *dhoti* as a lower garment for both men and women and made of cotton, and a covering for the head and the shoulder.

For weaving, double-pointed bone pieces were used. Later these were also made in *kaolin*, as evidence from Nasik shows. These could also be used for writing, and if so they would be regarded as styluses.

Not much can be said about other aspects of life. Iron was presumably unknown before the beginning of this period (*c*. 800 BC); later not only known, but smelted as can be inferred from the occurrence of 'slags and ores' not only at Hastinapur, but Atranjikhera and from sites farther afield, where though Painted Grey Ware has been found, no traces of habitation have been recorded.

Of the copper objects, Hastinapur has yielded an arrow-head, an antimony rod, a nail-parer and a borer.

This is certainly a very modest, nay very much incomplete, picture of a period which apart from being called a 'civilization' having a very wide extent, was at the threshold in the transition to the historical period proper. While much can be said from the literary evidence which can enliven the picture, much of which should be contemporary but unfortunately not well dated has been here omitted. It is archaeology alone which can give but which unfortunately has not been properly tapped. However, the most important evidence provided by this one excavation is about the use (domestication) of the horse. Though the bones of horse of an extinct type, and of the living type have been found from river gravels no where had been found the bones of the domesticated horse (*Equus Caballus*) barring perhaps Surkotada in Kutch. These occur in the top layers of Period II at Hastinapur. So far only three cut pieces have been recorded. But these are enough to aver that the horse was known and even slaughtered for food. Unfortunately this important clue has not been followed up, nor do we possess such a knowledge from sites like Atranjikhera, Kausambi and Ahichchhatra in Uttar Pradesh, and Noh in Rajasthan.

There is no item in the cultural equipment of the Painted

Grey Ware deposit at Hastinapur which is indicative of a truly prehistoric phase in the evolution of the Indian Culture. There is nothing of a transitional phase, except perhaps pottery, the shapes of which however became the hallmark in the historic period. The rest—the bone styluses or knitting pins, gadrooned beads, glass bangles, the copper arrow-head with a rounded body and large cylindrical 'weights,' or ear plugs—all these characterize the earliest historic deposits in the whole of northern India and elsewhere later. Hence it would be logical to think that the Painted Grey Ware culture truly represents the dawn of the historical period and not so much the end of the prehistoric. Hence its lower dating as proved by a series of Carbon-14 determinations from Ahichchhatra, Hastinapur and Noh is justified, and the single date from Atranjikhera should be disregarded.

This conclusion would have an important bearing upon the view consistently held by our traditional accounts—the epics and the Puranas. All these have always maintained that the Bharata War saw the end of the *Dvaparayuga* and the beginning of the *Kaliyuga*. It might be recalled that this conclusion also supports one of the premises of Professor Lal viz. that the Painted Grey Ware sites seem to represent the sites mentioned in the *Mahabharata*, but contradicts the other one, viz. that it also belongs to the Early Aryans. Traditionally the Aryans lived at a much earlier period, about 3000 BC, whereas according to some of the scholars they arrived in India in about 1200 BC. This is certainly very late.

Not only the Painted Grey Ware is found in the classical *Mahabharata* sites, but its wide distribution is coextensive with the various kingdoms which took part in the war, such as Mudra, Sindhu and Gandhara in the north and northwest and Pragjyotisa, and Rajagriha in the east, besides the main participants, Kuru-Panchala. Thus only the Yadavas of Dwarka remain outside equation, though those who ruled around Mathura would be included. However these were small sites, defendent mainly on stock breeding and agriculture. Iron had been just introduced. But these could never have had very large four-fold armies. It is probably this picture of the newly-formed, Early Iron Age kingdoms, with its epicentre in central Uttar Pradesh that the Puranas have in view, though painted in

glorious colours. Thus Pargiter might be proved right but in a different way.

The recent discovery at Bhagvanpura in Haryana is not likely to alter or affect this interpretation, even though the Painted Grey ware is here associated with the Ochre Coloured Pottery, and so far no iron is found. As no C-14 dates are available, it is possible to suggest that here OCP might be late!!

GLOSSARY

Abbevillian—The earliest handaxe industries known in Europe, named after the site of Abbeville on the river Somme in France. The handaxes found at this site were characterised by deep large flake scars and irregular forms. Such crude early handaxes found elsewhere are often called Abbevillian.

Acheulian—The name given to the handaxe industries found at St. Acheul on the river Somme in France. The tools of this industry are well made; the flake scars are shallow and regular. The form of the tool is thus more symmetrical. Stratigraphically this industry succeeds the Abbevillian but falls within the Early or Lower Palaeolithic culture. The Indian Lower Palaeolithic industries from the Peninsula, by and large, are Acheulian in character.

Aggradation—A process which builds up the land surface through the agency of running water, glaciers, wind activity, etc.

Alluvium—A general term used for all the secondary (detrital) deposits resulting from the operations of the rivers.

Anthropology—The science dealing with the origin and evolution of man, both biological and cultural.

Aurignacian—An Upper Palaeolithic culture named after the site of Aurignac in France. It is found extensively in the Near east and Central and western Europe. The characteristic implements of this culture are varied artifacts like scrapers made on flint and bone artifacts. This culture is famous for its first cave art. Its beginning goes back to 31,000 years BP in Central Europe.

Australopithecus—The name Australopithecine was given by Professor Raymond Dart in 1924 to a baby skull found at Taung in Bechuanaland, south Africa, and since then more discoveries have been made by Drs R. Broom and L.S.B. Leakey in Africa. These men-apes lived during early Lower Pleistocene. The brain of these was more or less of the same size as that of living African apes. However, their pelvic and foot bones indicate that they could walk erect and used their hands for manipulating tools. They had teeth essentially of human type. In subsequent years, the discovery of fossil men showing similar characteristics were made in other parts of the world and these were also referred to as Australopithecus.

Barbarism—The dictionary meaning of barbarism is rude, wild, or uncultured state. In Anthropology it is the second of the three cultural stages recognised by the American anthropologist, Lewis Henry Morgan. It denotes a neolithic or primitive economy. During this stage man lived by agriculture and domestication.

Blood Group—Biological division based on blood differentiation into four main groups: A, B, O, and AB.

BP—These abbreviated letters stand for 'Before Present' and came to be frequently used in archaeological literature when it was generally agreed by the scholars concerned to take the year 1950 as the one with which to compare the radio-activity obtained by the measurement of the radio-activity in a given archaeological sample. Thus for example the measurement 3750±150 BP=2000±150 BC or 3750±150 before present.

Charentian—A variant of Momusterian culture in south-west France, named after the French province of Charente.

Chatelperronian—The earliest of the Upper Palaeolithic cultures in central and south-west France, characterised by tool assemblages made on blades. The diagnostic implement is the Chatelperronian knife, a blade with a straight cutting edge and a curved blunted back. Its beginning goes back to 35,000 years BP.

Degradation—A process which wears down the land surface through the agency of running water, wind activity, glaciers, etc.

Druids—A powerful priestly class among the Celtic peoples of ancient Gaul (France) and Britain. They suffered decline

from the invasion of Romans and later by the spread of Christianity in these areas. In England popular belief associates Druids with the famous megalithic monument known as 'Stonehenge.'

Ethnography—Descriptive study of living cultures.

Fertile Crescent—The term was coined by Dr Henry Breasted to designate the territory where civilization first began. This crescent-shaped area extends from Iran through the Zagros mountains in northern Iraq and Tauros mountains into Turkey through Palestine to the Nile delta. According to Breasted, this region with its naturally growing wild grains like wheat and barley, and animals like sheep, goat, and pig in their wild forms was most suitable for the birth of civilization, a higher way of life than mere food-gathering.

Fossil—When an organic substance like bone or wood gets buried, there is sometimes a gradual replacement of organic matter by mineral matter like silica and calcium carbonate. The remains of plants or animals preserved in this way in rocks are called fossils and the process is referred to as fossilization. Casts, moulds and prints are also referred to as fossils.

Glacio-Eustatic Fluctuations—Lowering and raising of sea levels due to glacial advance (formation of glaciers) and glacial retreat (melting of glaciers) respectively.

Günz—The first glacial period of the Pleistocene named after a small Alpine river.

Holocene—(Recent or Post-glacial), the second epoch of the Quarternary period. It covers the period from the end of the Pleistocene Ice Age (10,000 BP) to the present day.

Homo erectus **(Pithecanthropus)**—An extinct form of man whose fossilized skeletal remains have been found in Java, Africa and China. *Homo erectus* was short, walked upright, had a receding forehead, flat nose, prominent eyebrows and no chin. His brain size was intermediate between that of Australopithecus and Neanderthal man. He evolved by the end of Lower Pleistocene and lived during the Middle Pleistocene (half a million years ago).

Homo habilis—An early form of man whose skeletal remains have been found in the same stratum as those of Zinjanthropus (Australopithecus *boisei*) at Olduvai Gorge in

Tanzania. This is distinguished from Zinjanthropus by certain characteristic features such as greater brain size, and shape of skull.

Homo sapiens—The name given to modern man. The first representatives of fully evolved *Homo sapiens*, the Cro-magnon race, spread across Europe between 40,000 and 30,000 years ago. *Homo sapiens* were the authors of Upper Palaeolithic cultures. They are characterised by finely-built, tall, muscular physique, high-domed skulls and refined facial features.

Hoxnian—The Second Interglacial period named after Hoxne in England.

Interglacial—A period of relatively warm climate between two major glaciations.

Interstadial—A short phase of relatively warm climate between two cold phases of a glacial period.

Levalloisian technique—The technique of producing flakes from carefully prepared cores named after the site of Levallois Perret near Paris. One face of the core is fully trimmed by centrally directed flake scars. This surface has the appearance of the back of a tortoise. Hence the technique is known as Tortoise Core Technique. This technique is associated with later Acheulian and Mousterian cultures. The Lower and particularly Middle Palaeolithic industries from India show limited use of this technique.

Loess—An unconsolidated, unstratified deposit of mineral fragments of the size range of 0.01—0.05 mm. transported and deposited by wind.

Magdalenian—The final Palaeolithic culture of western Europe, named after the site of La Madeleine in the Dordogne in France. It is famous for cave art, and beautiful decorative work in bone and ivory. The time range is *c*. 15,000—10,000 years BP.

Mindel—The second glacial period during the Pleistocene named after a small Alpine river.

Mousterian—A Middle Palaeolithic culture named after the site of Le Moustier in south France. The characteristic implements of this culture are various types of scrapers and points. This culture is found extensively from central Asia through near east to western Europe and northern Africa. Many of

the scrapers and points of the Indian Middle Palaeolithic industries show close affinity with Mousterian tools. The time range of this culture is from 90,000 BC to 35,000 BC.

Neanderthal Man (*Homo Neanderthalensis*)—An extinct form of man, named after the cave near Dusseldorf in Neanderthal Valley in Germany, is considered to represent a stage intermediate between *Homo erectus* and modern man. Some authorities nowadays regard this form of man as a sub-species of modern man (*Homo sapiens neanderthalensis*). This man had massive brow ridges, prominent upper jaw and large teeth. His brain was as large as modern man's. The skeletal remains of this man in association with Mousterian implements have been found at a number of places in Europe, north Africa, near east and Russia. Neanderthal man lived from 1,00,000 to around 35,000 years ago.

Palaeolithic—Palaeolith means 'old stone.' The period which began with the emergence of man the tool-maker some 2.6 million years ago, according to latest estimates, and lasted till 10,000 years ago is called Palaeolithic. During this period man was mainly hunter-gatherer. It has three divisions: Early or Lower, Middle and Upper or Advanced.

Phases and Period—When archaeologists dig a site they observe differences in natural soil layers as well as differences in the types of objects found. These layers, structures and objects are grouped into Periods, and their sub-divisions called Phases. Objects from the lowest/deepest layers, and differing from those above, would be placed in Period I, and so on. Marked distinctions or differences between the objects and layers necessitate the designation of the layers and their associated objects to a separate Period, while the division into phases shows some internal relationship between the objects.

Pleistocene—The first epoch of the Quaternary period which commenced around two to three million years ago according to latest estimates. During this epoch, the emergence and evolution of man and development of human cultures took place.

Pollen and Pollen Analysis—Microscopic grains containing the male reproductive cells discharges from the anther of flowers. The science which deals with the study of pollens is known as Palynology. The study of pollen grains helps in determining

the nature of vegetation and the climatic conditions prevailing at the time of the formation of deposits containing the pollens.

Potassium-Argon dating—A dating method based on the radio-active decay of the unstably element Potassium-40 into Calcium-40 and Argon-40. This method is useful in case of rocks which are rich in potassium minerals. The method was tried at Olduvai Gorge, east Africa, and it helped in dating the earliest archaeological material together with the remains of man's ancestors to 2.6 million years ago.

Radio-Carbon dating—The radio-carbon dating method discovered by W.F. Libby is widely used in archaeology to determine the absolute age of an ancient object. It has become possible to determine the age of natural carbon bearing archaeological material from present to about 70,000 years back. This method is based on the rate of radio-active decay of the isotope of carbon, C-14.

Raised beach—An ancient shore line found above the present sea level. This was formed when the sea level stood higher than at present during an interglacial period due to increased volume of water contributed by melted ice.

Riss—The third glacial period during the Pleistocene, named after a small Alpine river.

Savage—The dictionary meaning of savage is uncultivated, wild, uncivilised, or in primitive state but in anthropology and archaeology, it means an economy dependent on hunting and gathering. This is the earliest of the three cultural stages recognised by the American anthropologist, Lewis Henry Morgan.

Solutrean—An Upper Palaeolithic culture in France named after the site of Solutre. This culture is characterised by beautiful pressure flaked, thin, leaf-shaped points. The time range of this culture is 18,000—15,000 years BP.

Symbiotic—A relationship of interdependence between different species of plants or animals.

Terrace—River terraces are topographic platforms, benches or steps in the river valley that represent former levels of valley floors or flood plains. The river that has already reached a mature stage and has established a flood plain is rejuvenated due to either tectonic, eustatic or climatic changes. It starts

cutting its own deposits and sides of the original flood plains are left as flat terraces above the new level of the river.

Typology—The objects—antiquities found by archaeologists are grouped or classified on the basis of their shape, technique of manufacture and functions. Hence this system or method of classification is called 'typology.'

Würm—The last (fourth) glacial period during the Pleistocene named after a small Alpine river.

Zinjanthropus (Australopithecus *boisei*)—The name given by Prof. Leakey to the skull of a fossil man discovered in Bed I, Olduvai Gorge, in association with pebble tools. It is regarded as a member of the genus *Australopithecus* which had a brain larger than that of a chimpanzee and could walk on two legs. Potassium-Argon dating has suggested that Zinjanthropus lived about 1.75 million years ago.

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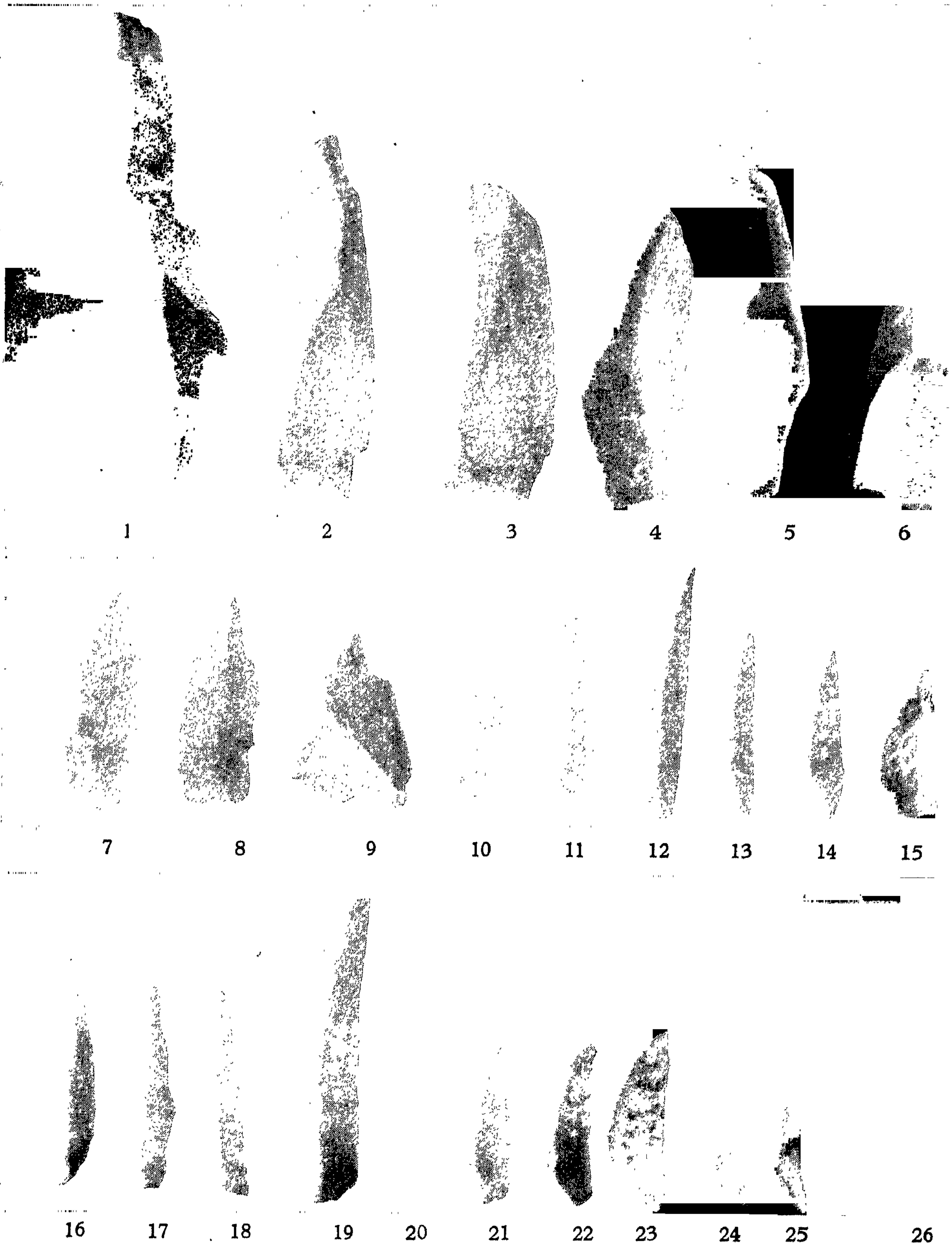
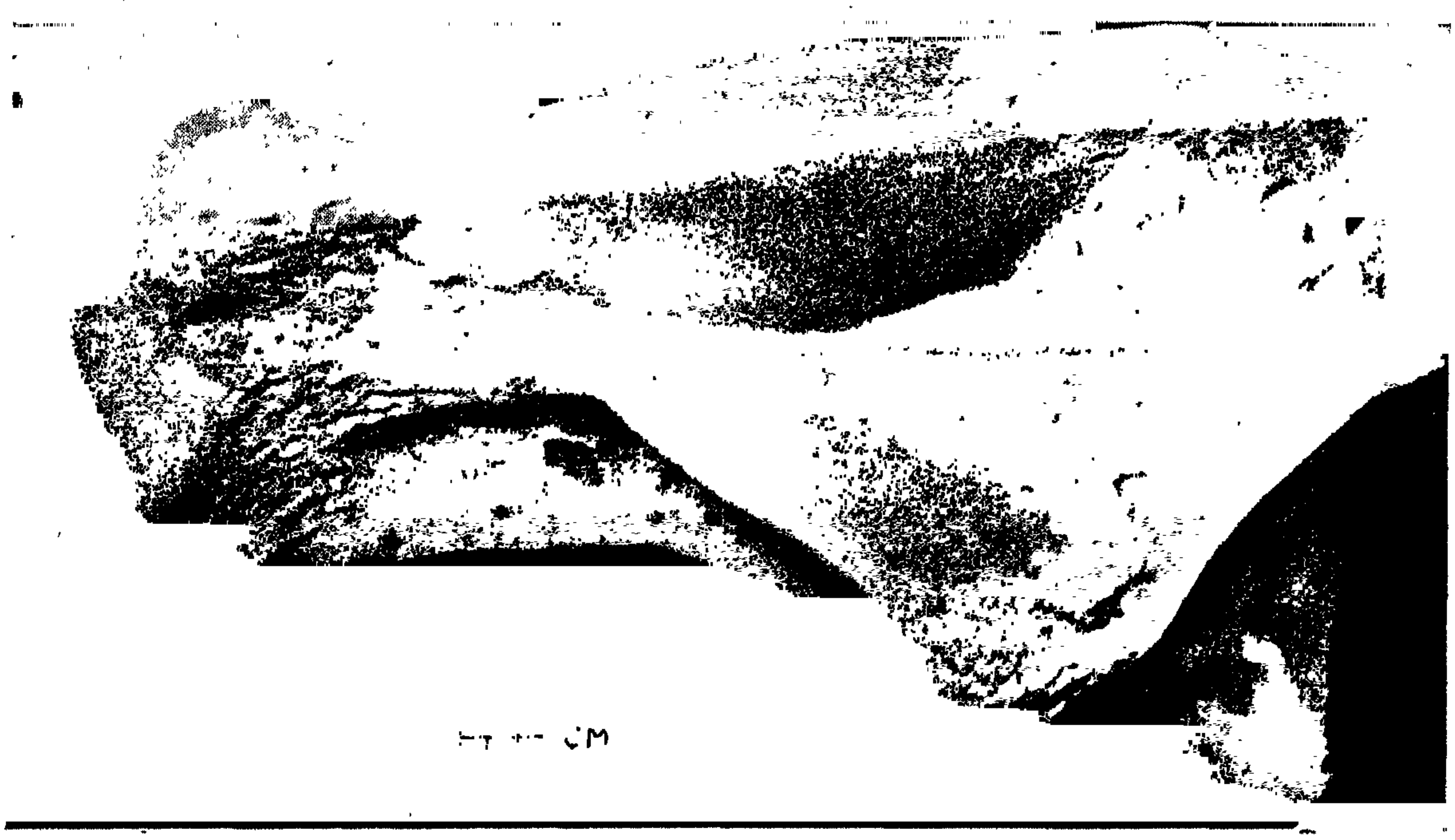
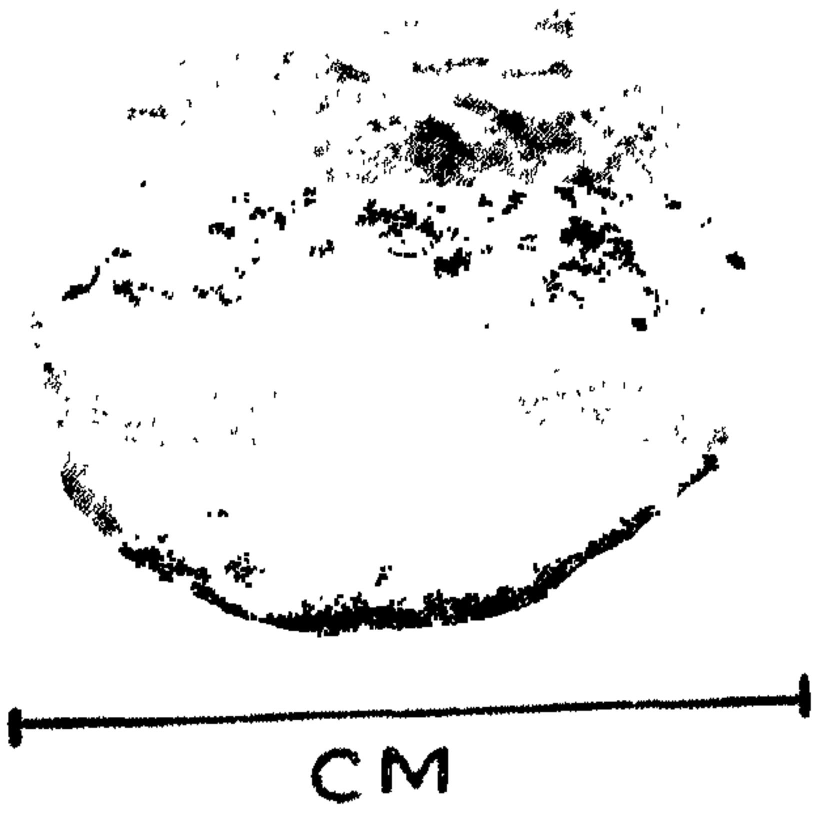


Ill. 1. Upper Palaeolithic tools from Renigunta, Andhra Pradesh, 1-9, burins; 10-22, backed

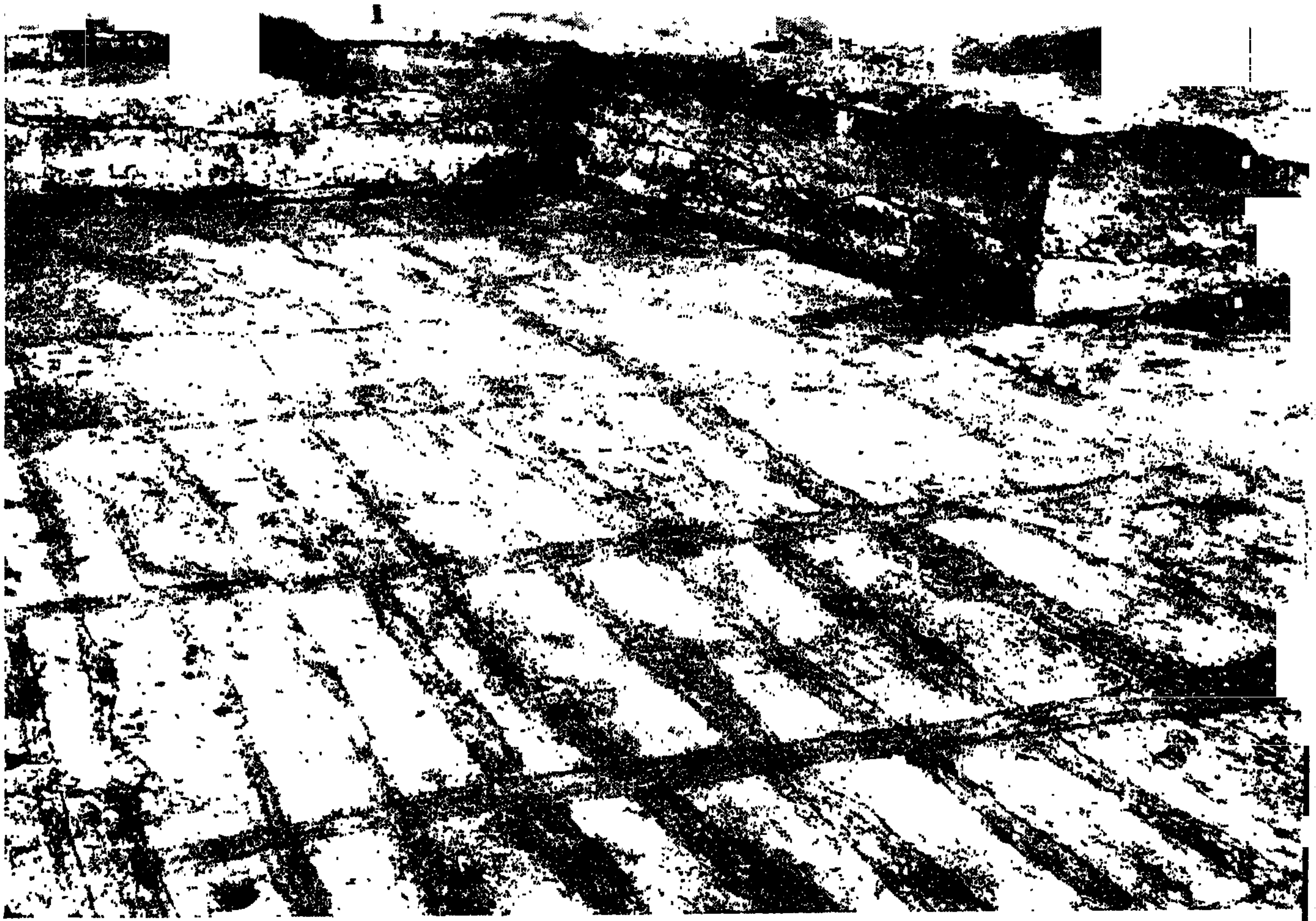


Ill. 2 (*top*). Rhinoceros shoulder blade used as an anvil from Mesolithic levels at Langhnaj. (*See* p. 70)



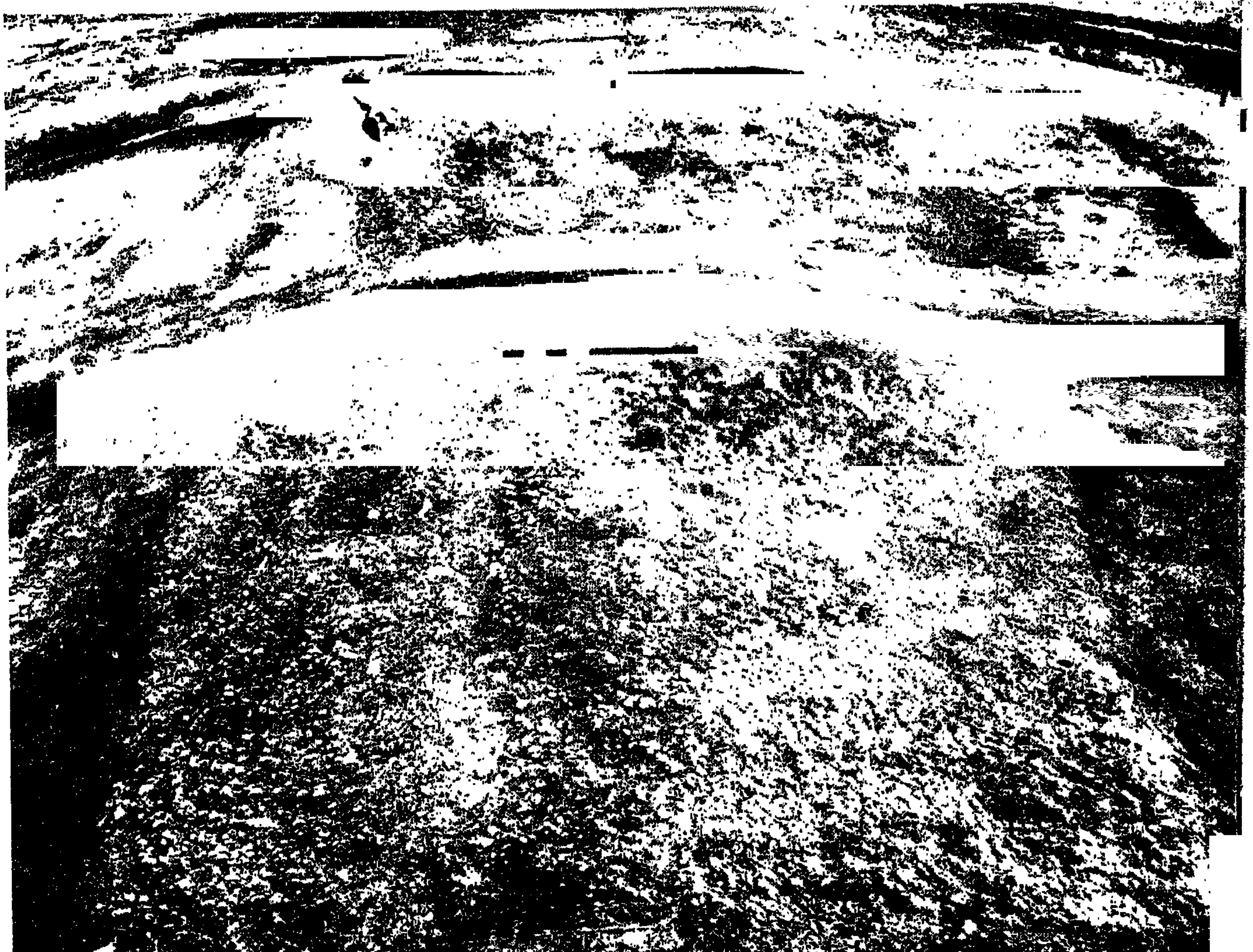
Ill. 3. (*centre*). Ostrich shell bead from Upper Palaeolithic levels at Patne, Dhulia District, Maharashtra. (*See* p. 66)

Ill. 4. (*bottom*). Mesolithic skeleton (man) from Langhnaj, Gujarat. (*See* p. 71)

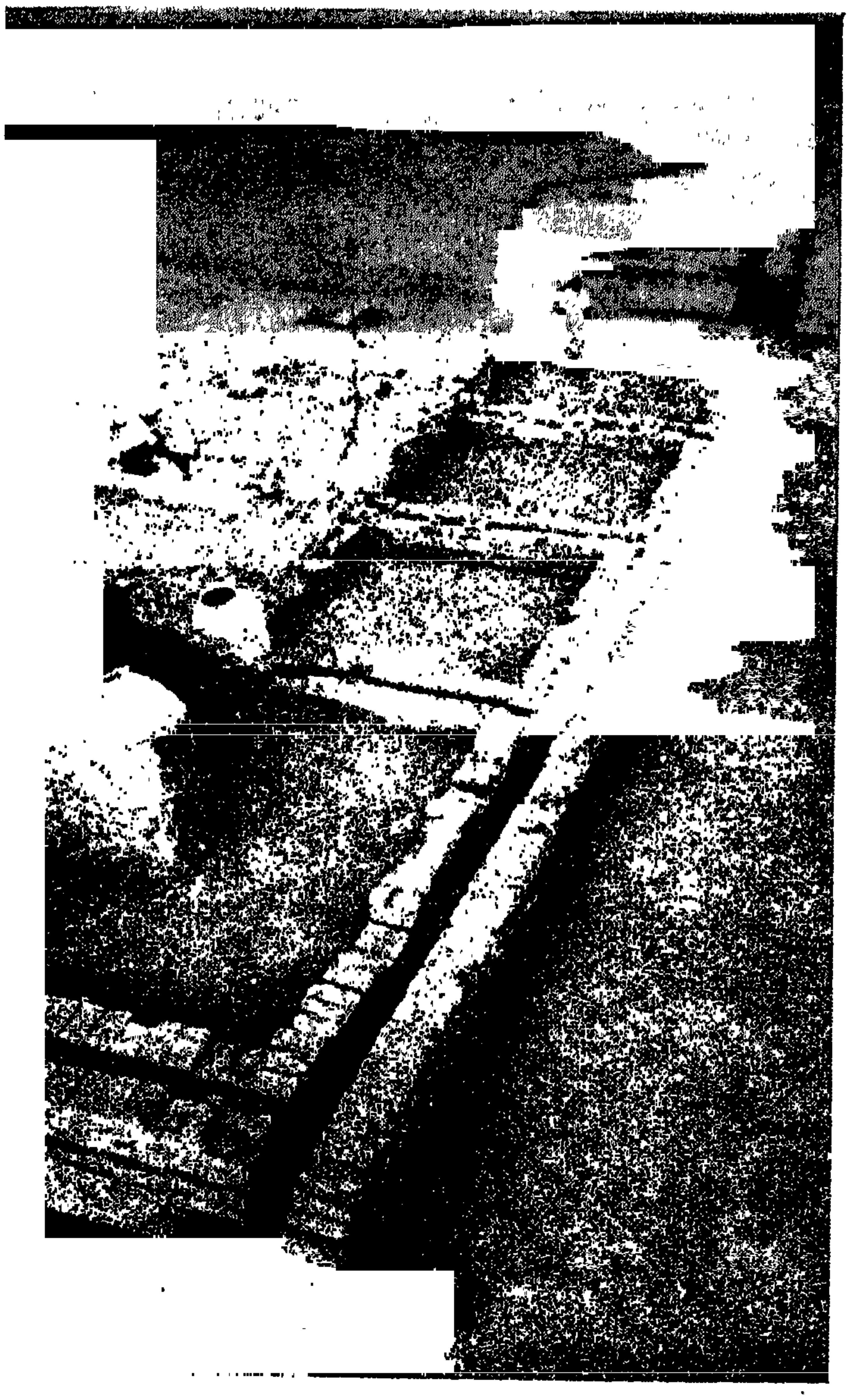


Ill. 5. (*top*). Pre-Harappan field furrow-marks between two mounds exposed at Kalibangan, Rajasthan. (*See* p. 89)

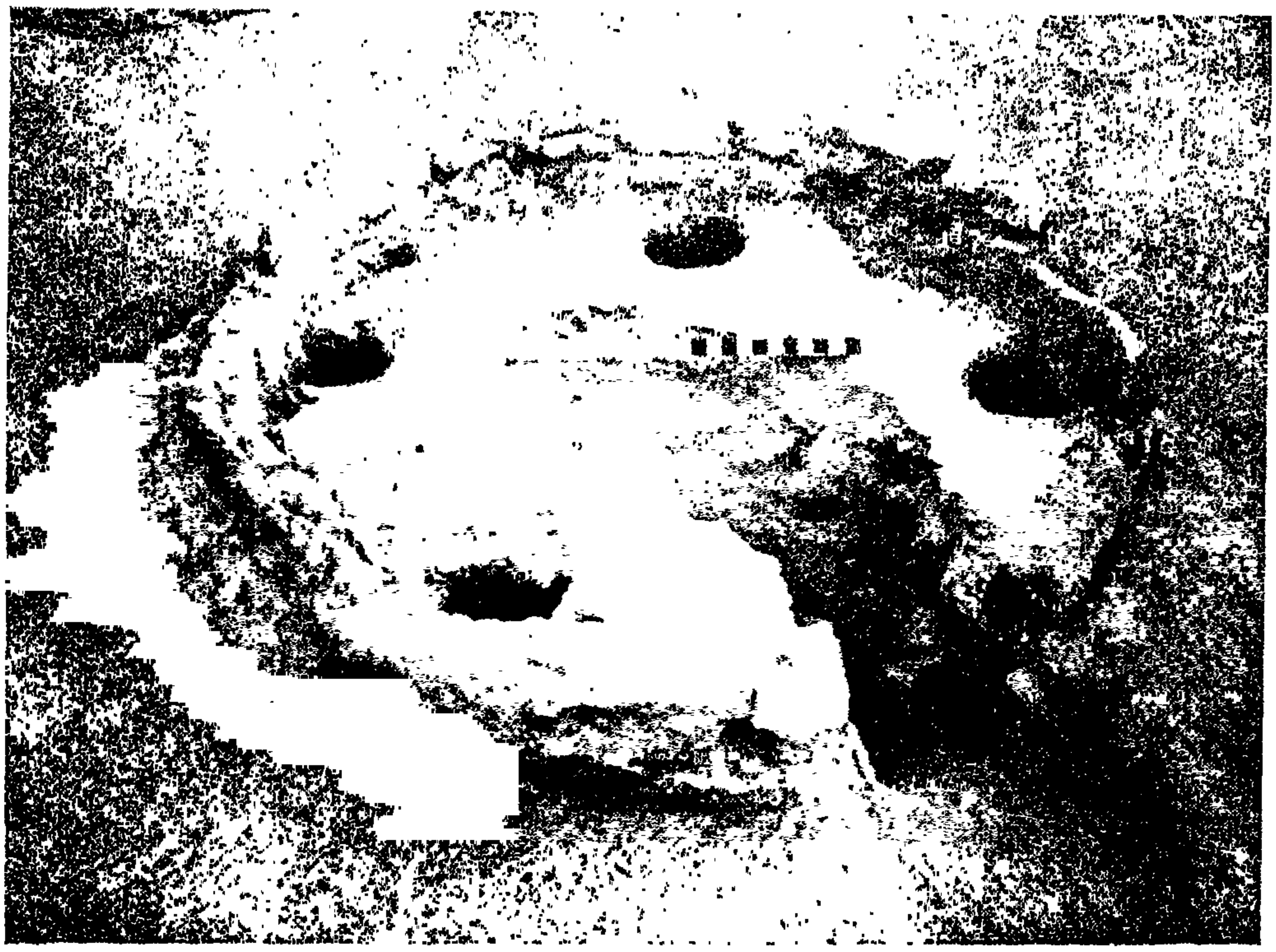
Ill. 6. (*bottom*). Earliest made 'road' exposed at Kalibangan, Rajasthan. (*See* p. 90)



Ill. 7. The 'Dockyard' at Lothal Gujarat. (*See* p. 95)

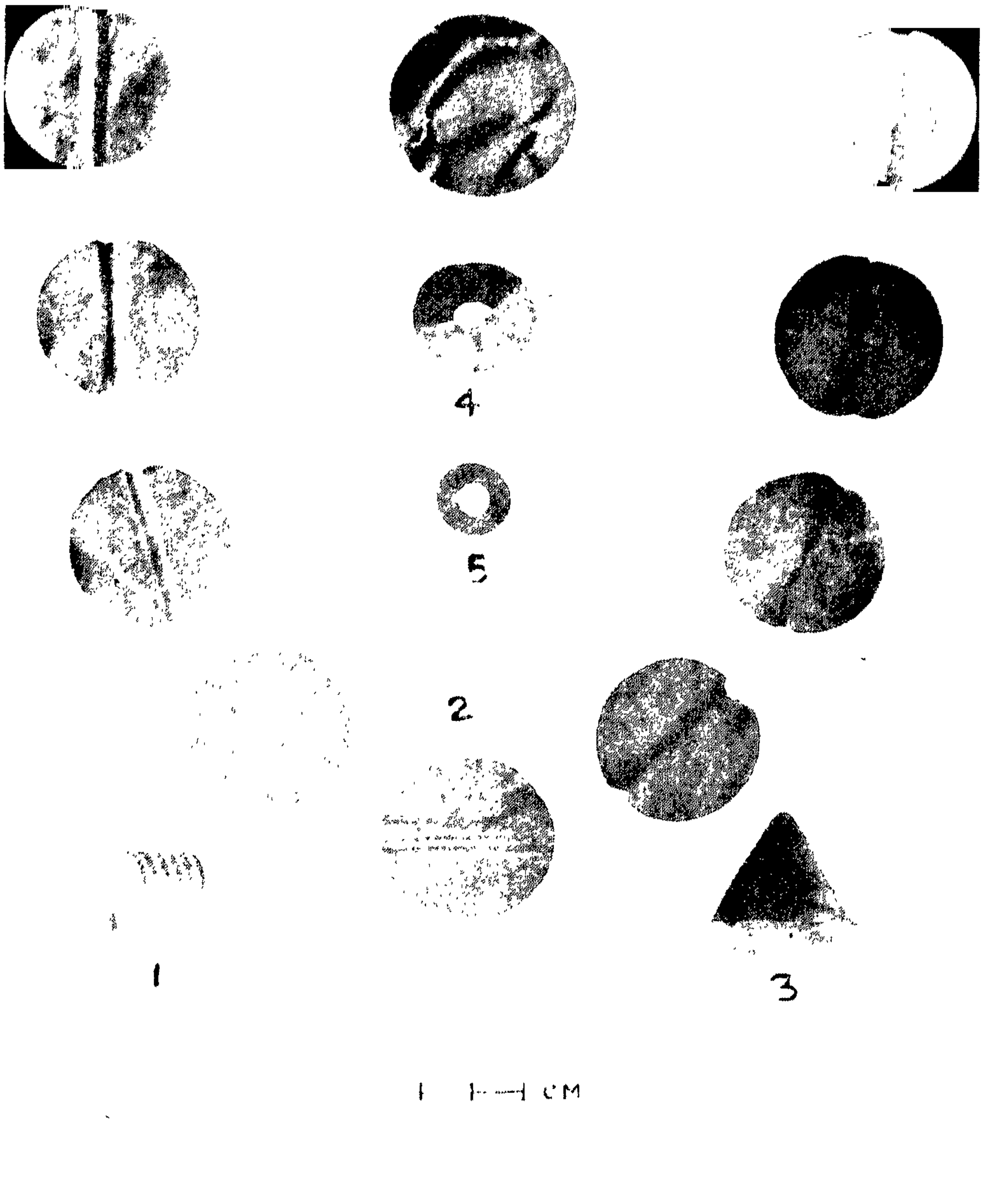


Ill. 8. A part of the highway with baked brick drains and a row of shops or remains of houses, Lothal, Gujarat. (*See* p. 95)

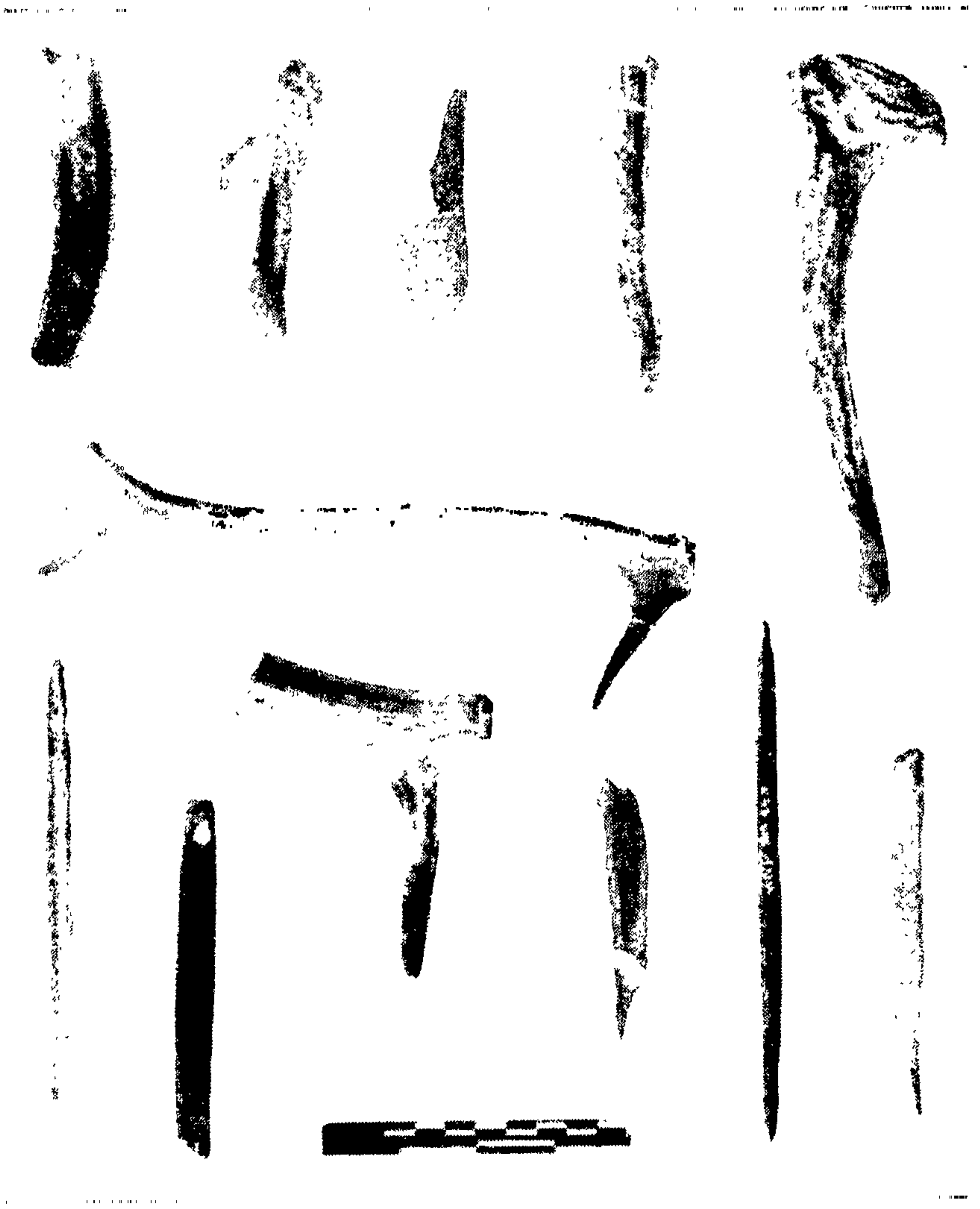


Ill. 9. (*top*). Kiln with circular flue holes, used for making beads, etc. Lothal, Gujarat. (*See*. p. 95)

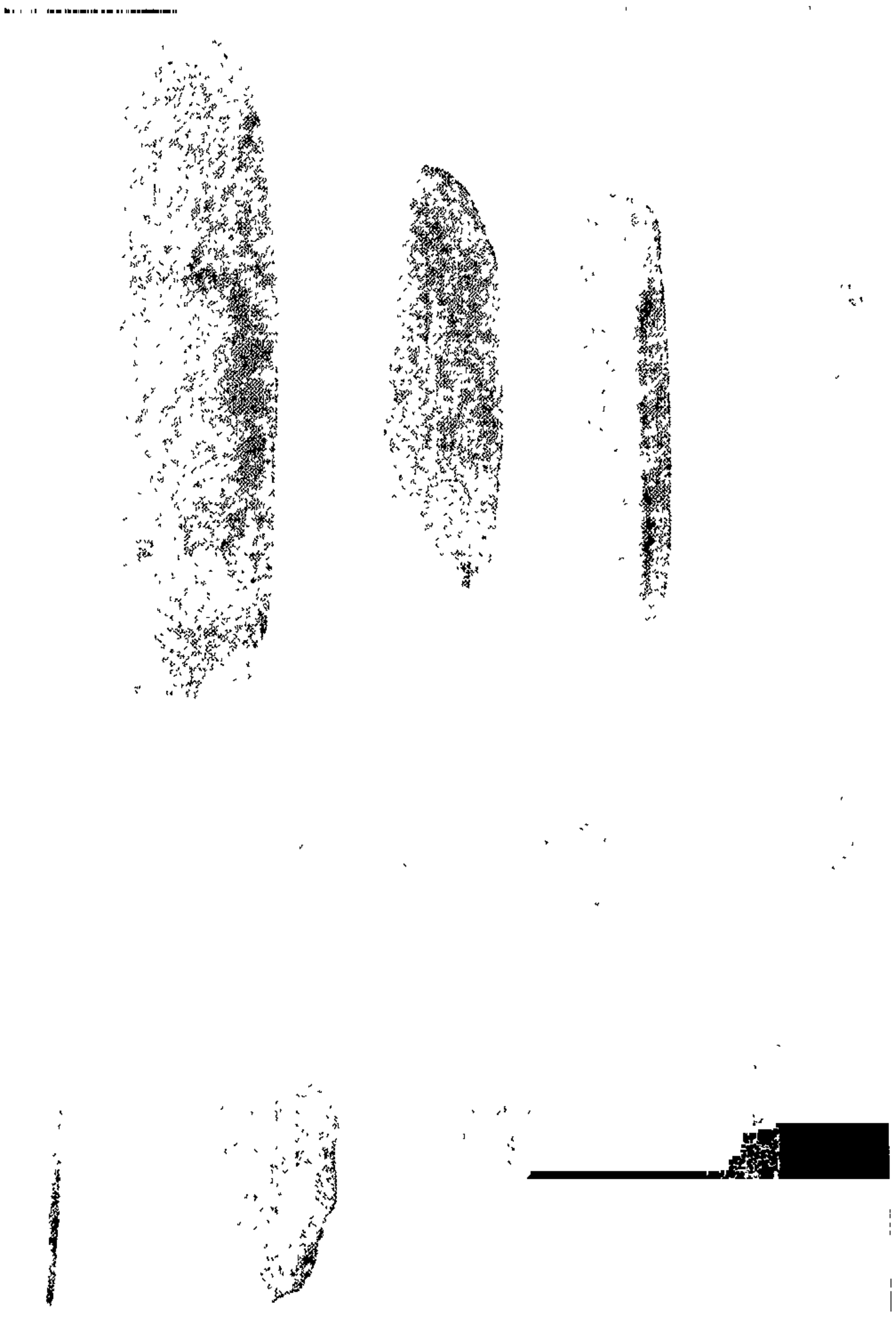
Ill. 9a. (*bottom*). A potter's house(?), Malwa Phase, Inamgaon. Note upper right a pit with three receptacles for keeping leather-hard pots. (*See* p. 125)



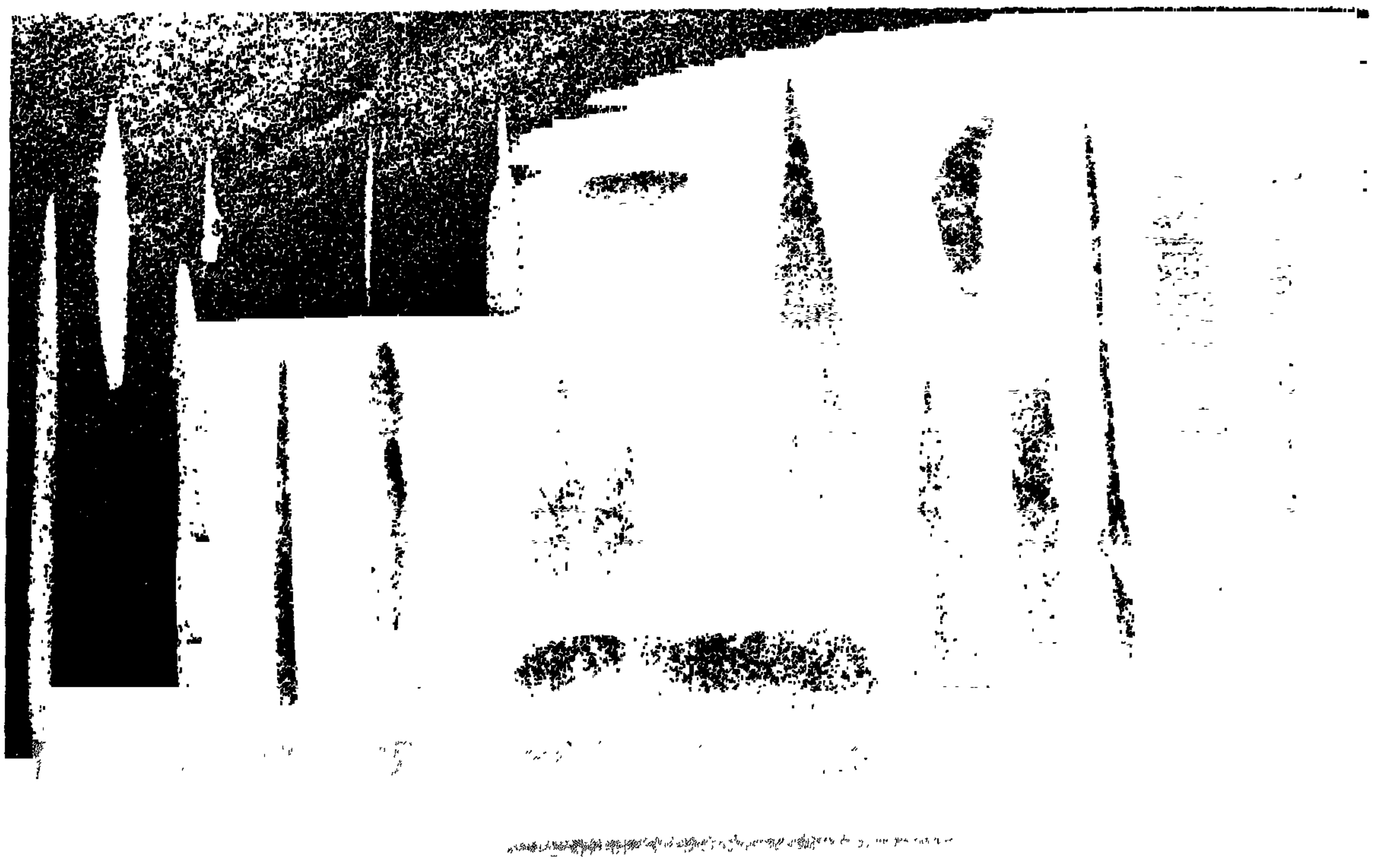
Ill. 10. Gold ornaments from Lothal: 1, anklet or bracelet; 2, part of a necklace; 3, conical pendant; 4, biconical pendant; 5, round bead. (*See* p. 95)



Ill. 11. (*top*). Bone tools from Neolithic levels, Chirand, Bihar. (*See* pp. 158-59)

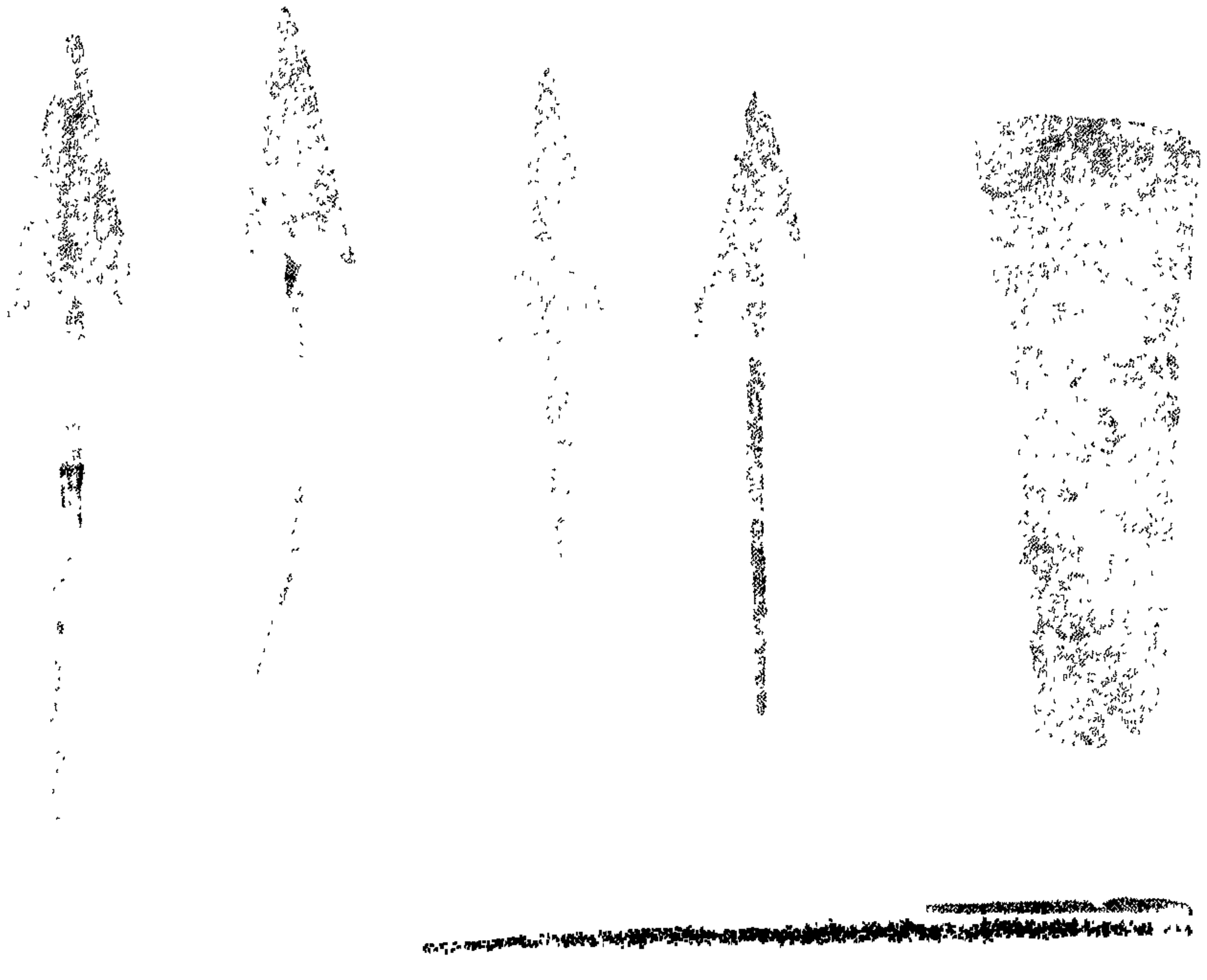


Ill. 12. (*bottom*). Polished stone tools and other objects, Burzahom, Kashmir. (*See* p. 166)



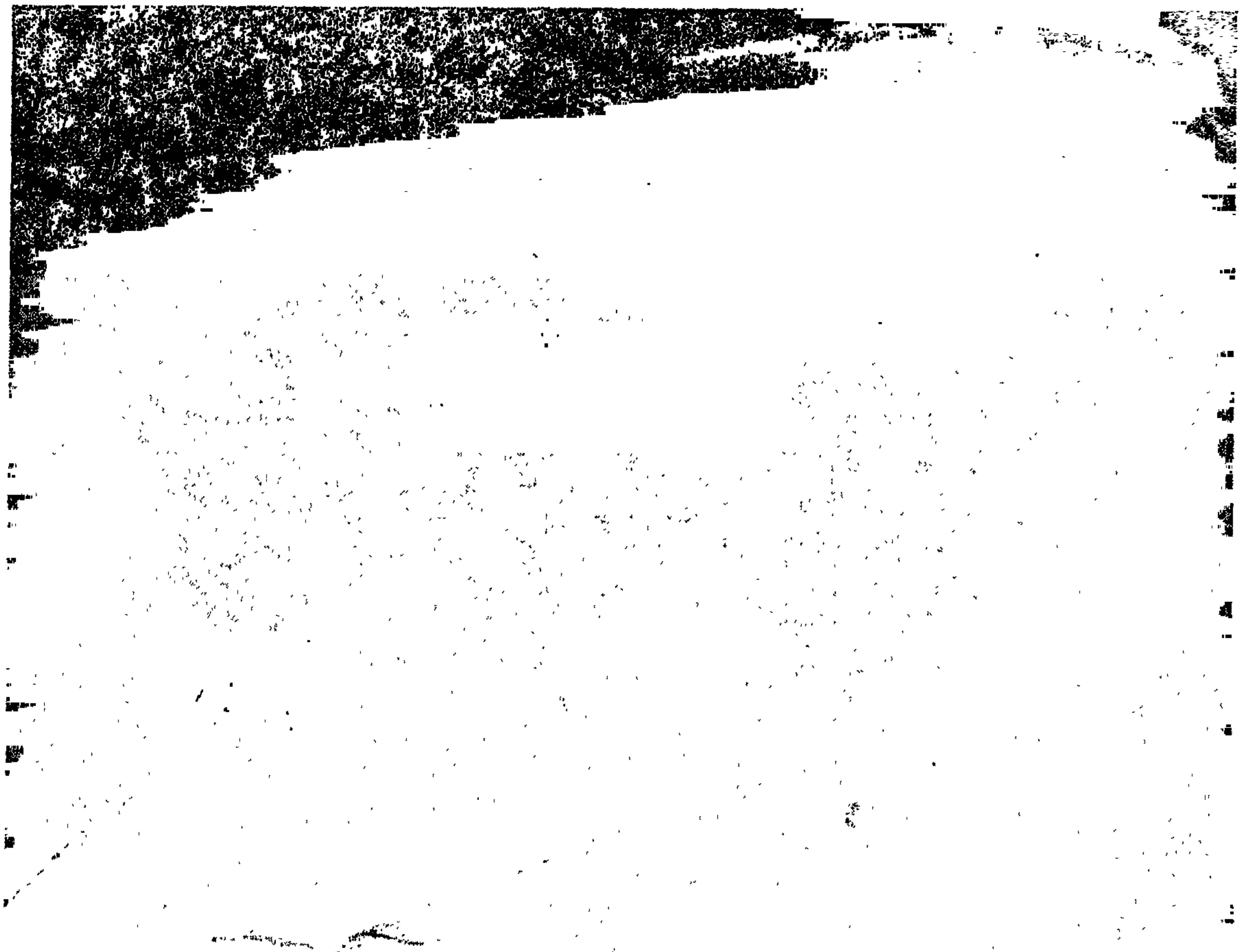
Ill. 13. (*top*). Neolithic bone tools, Burzahom, Kashmir. (*See* p. 167)

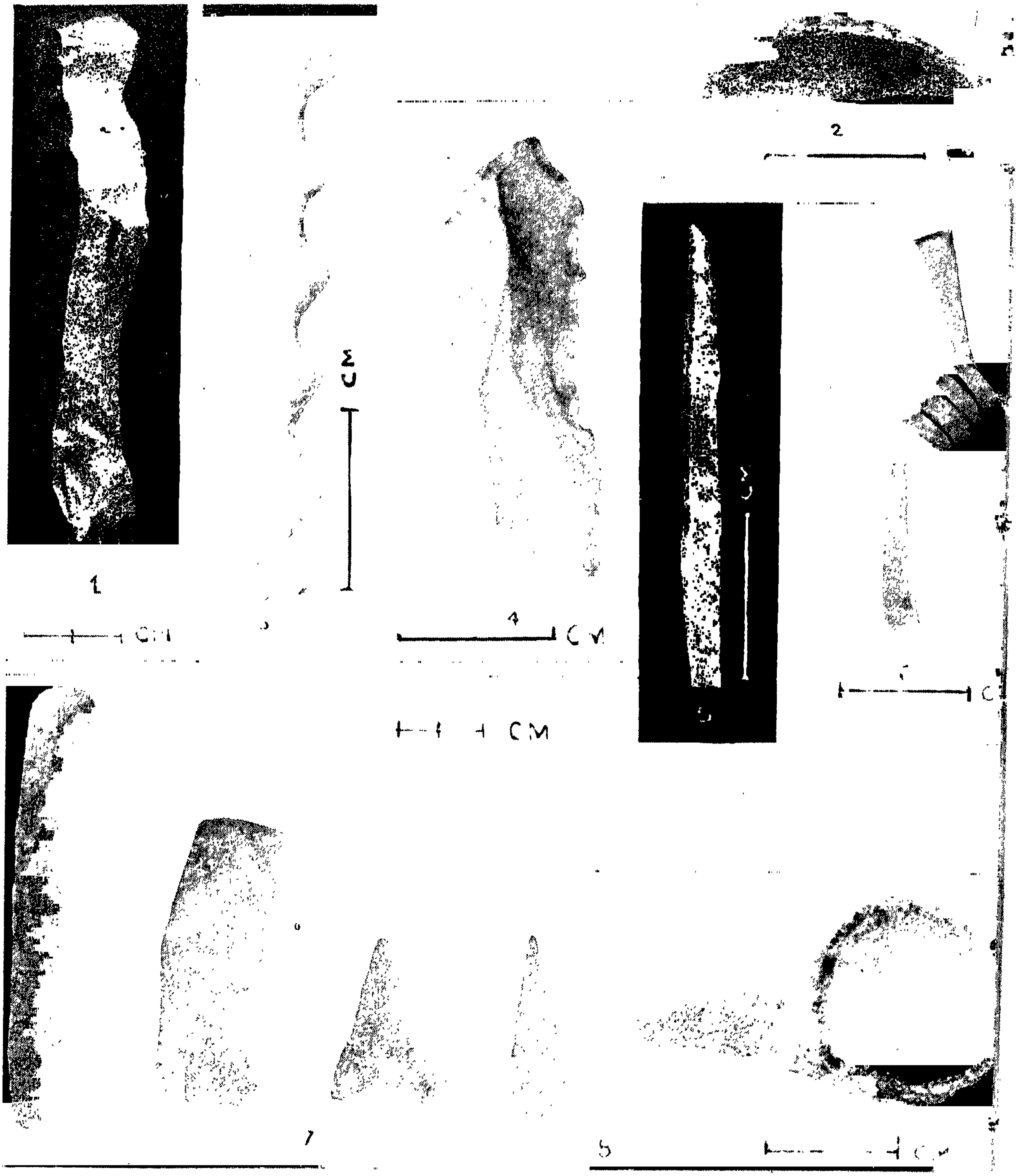
Ill. 14. (*bottom*). Copper arrowheads and a large chisel or axe, Burzahom, Kashmir. (*See* p. 167)



Ill. 15. (*top*). Highnecked pottery vessel with a bulbous body, Burzahom, Kashmir. (*See* p. 165)

Ill. 16. (*bottom*). Engraving on a large stone found in the excavation, Burzahom, Kashmir. (*See* p. 167)



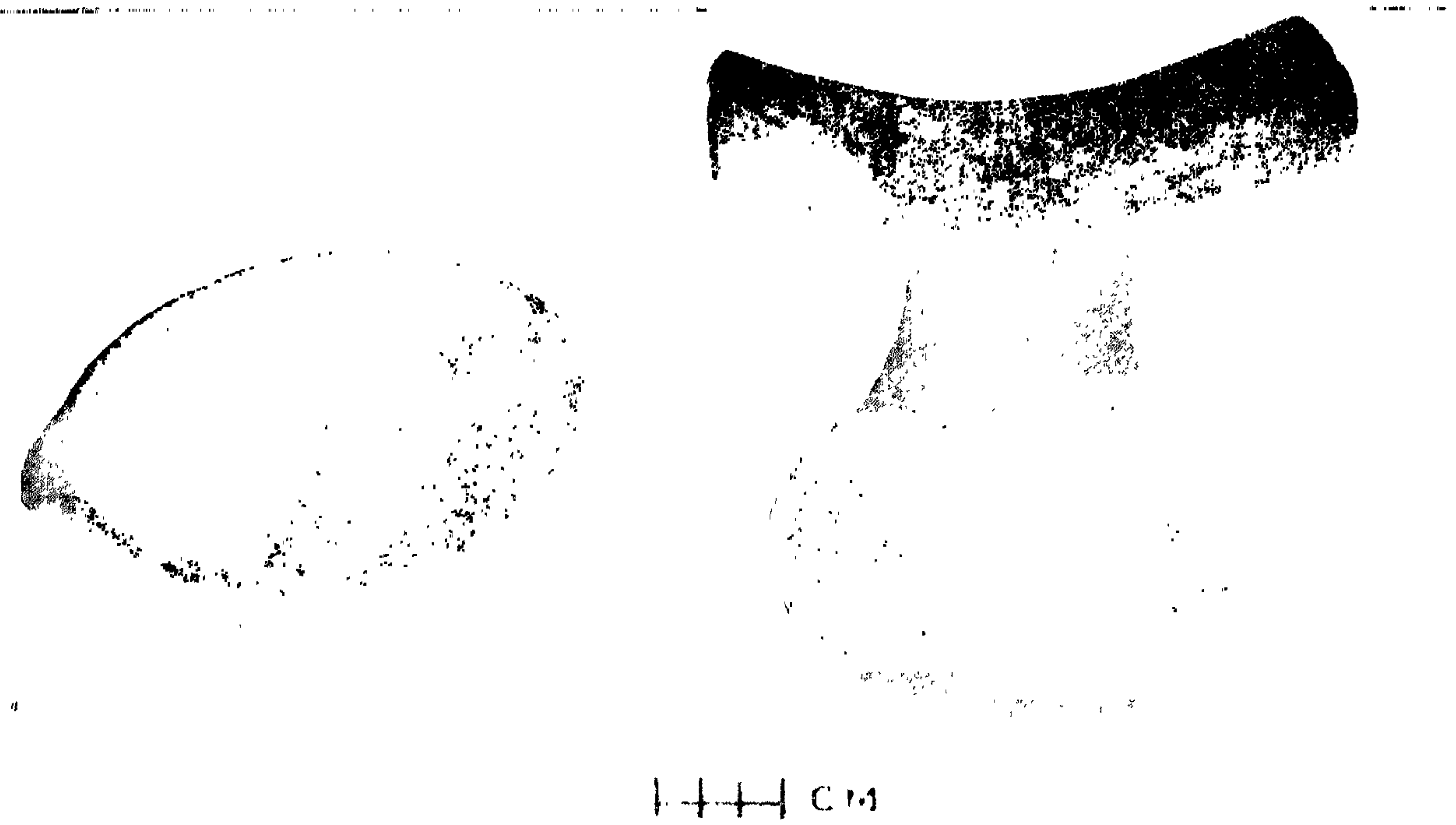


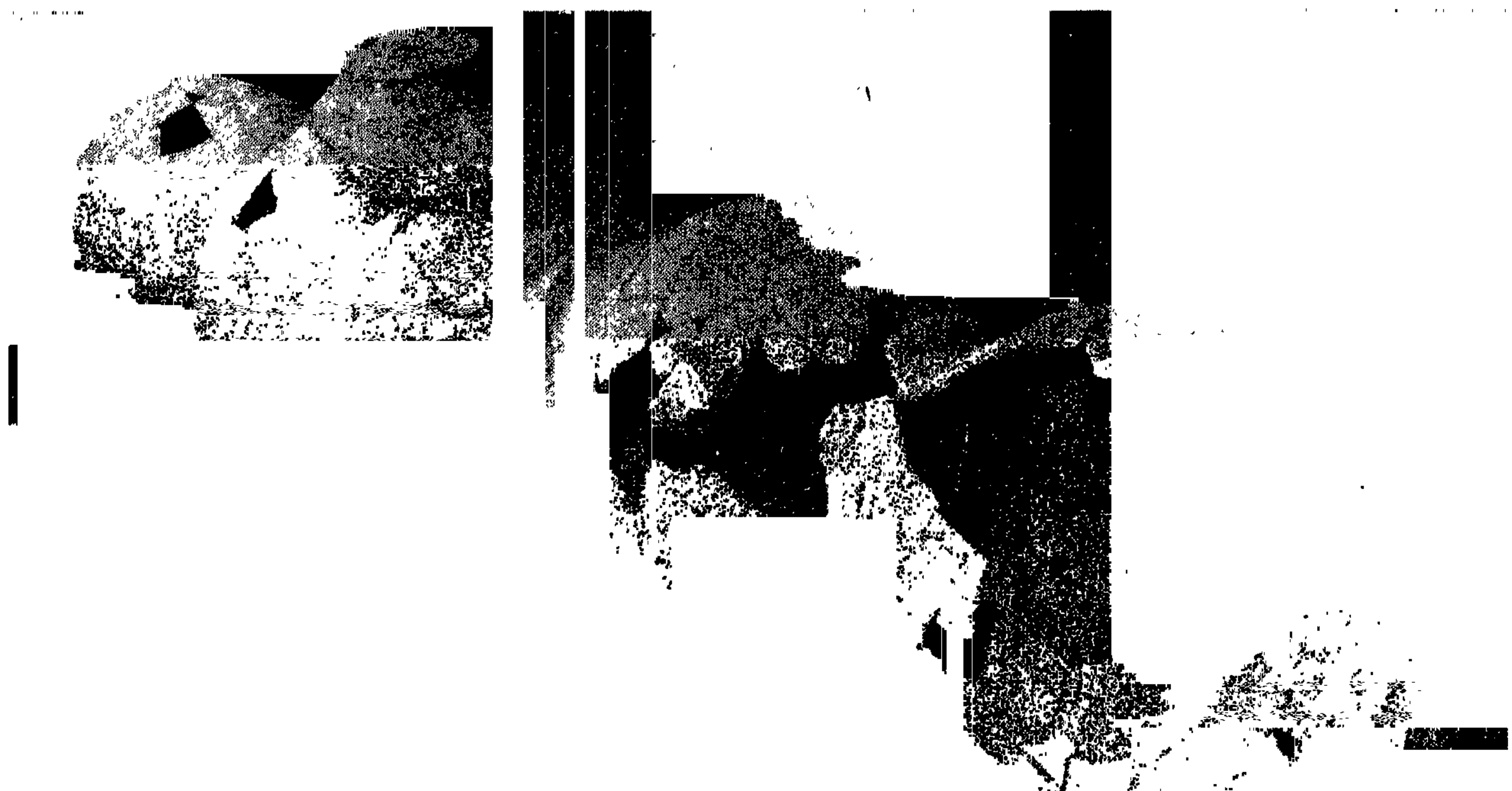
Ill. 17. Miscellaneous objects belonging to the Southern Neolithic. 1-5, blade tools of chert; 6, gold ornament; 7, bone tools; 8, terracotta lamp. (*See* p. 141)

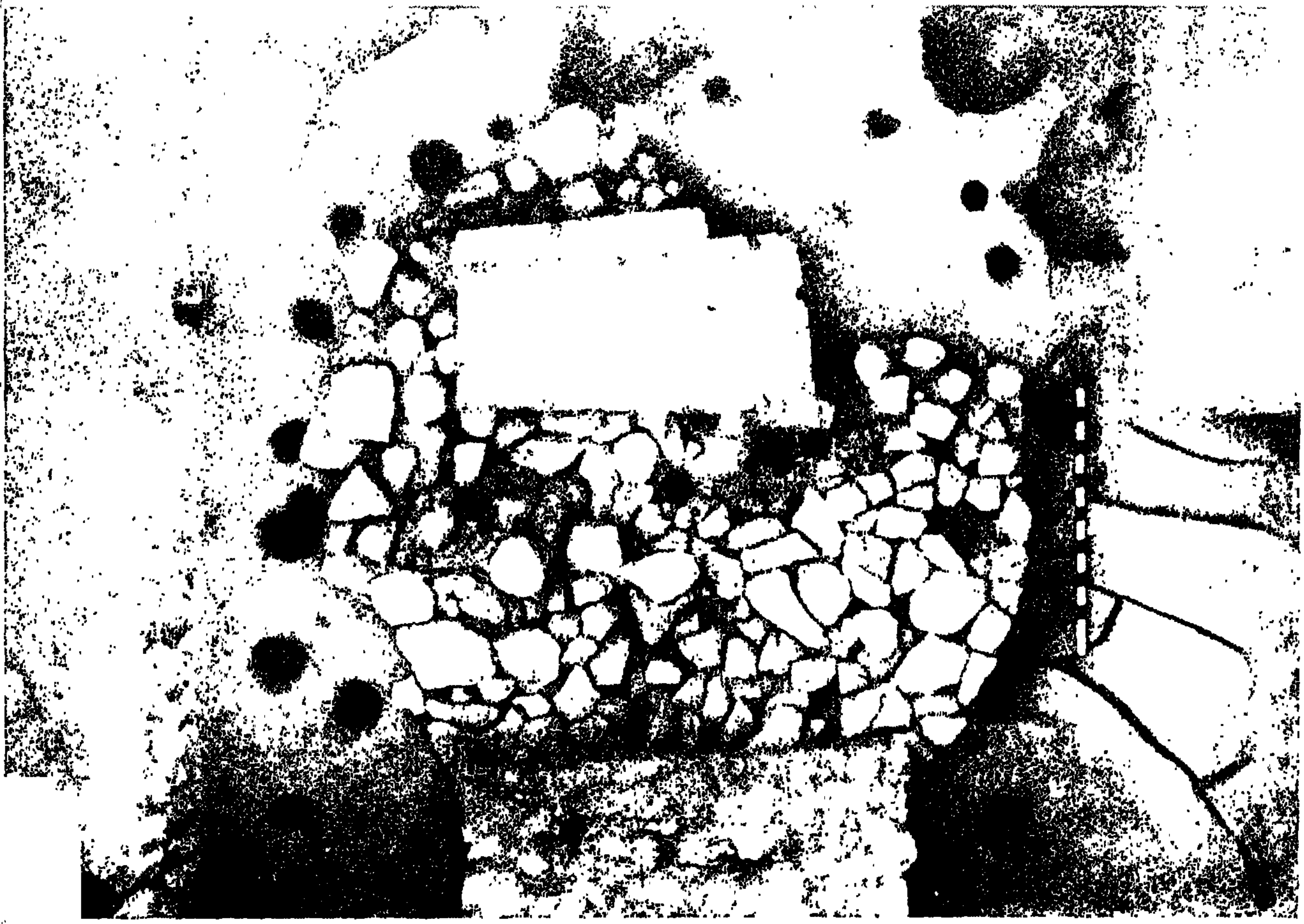
Ill. 18. (*top right*). Lid with punctured decoration of peacock and other animals. Tekkalkota, Karnataka. (*See* p. 148)

Ill. 19. (*centre*). Lamp and a neckrest from T. Narsipur, Karnataka. (*See* p. 143)

Ill. 20. (*bottom*). Four pot burial, Phase II, Tekkalkota, Karnataka. (*See* p. 142)

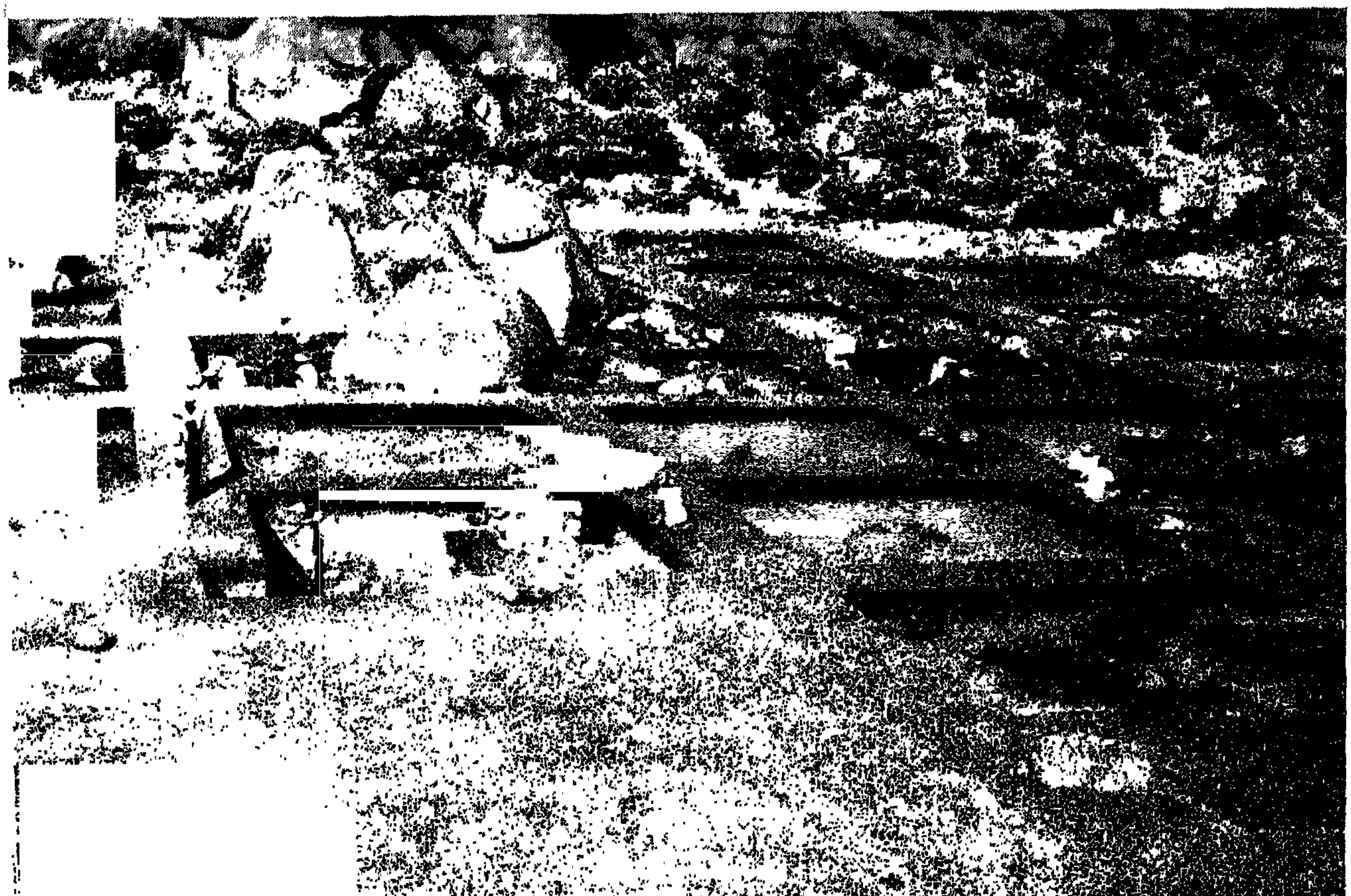






Ill. 21. (*top*). Ground plan of a round structure, Sanganakallu, Karnataka. (*See* p. 140)

Ill. 22. (*bottom*). A view of the excavated squares, on Terrace I at 230 ft. Tekkalkota, Karnataka. (*See* p. 140)



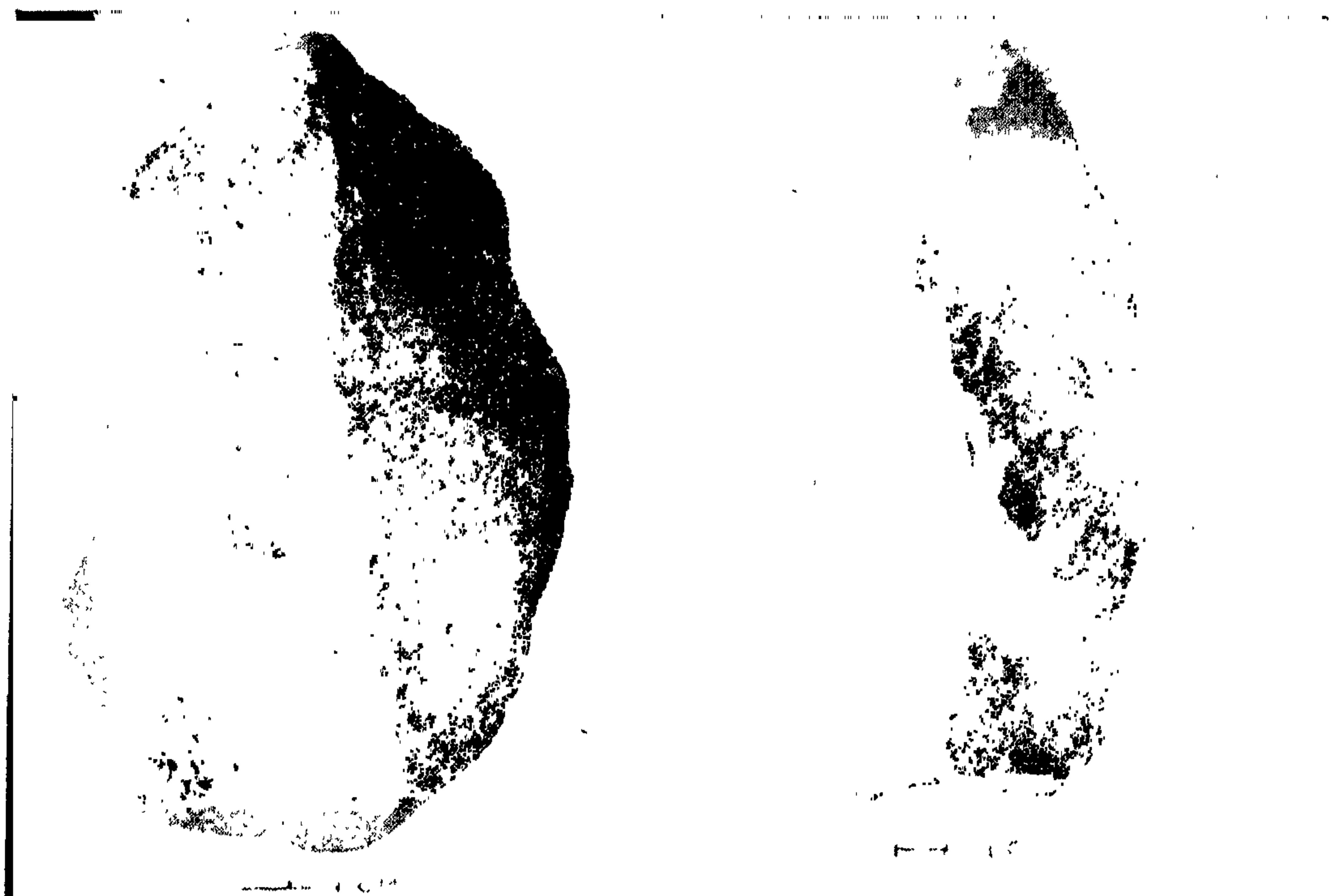
Ill. 23. (*top*). The Liddar Valley, Pahlgam, the tools were found on the right bank of the river below the golf ground. (*See* p. 48)

Ill. 24. (*bottom*). Section of the right bank of the East Liddar, Pahlgam, showing the Boulder Conglomerate capped by brownish clay, with handaxe. (*See* p. 48)

A

B

Ill. 25. Early Stone Age tools from Pahlgam, East Liddar, Kashmir. A-B massive flake from the Boulder Conglomerate; C-D handaxe from the brownish clay. (*See* p. 48)

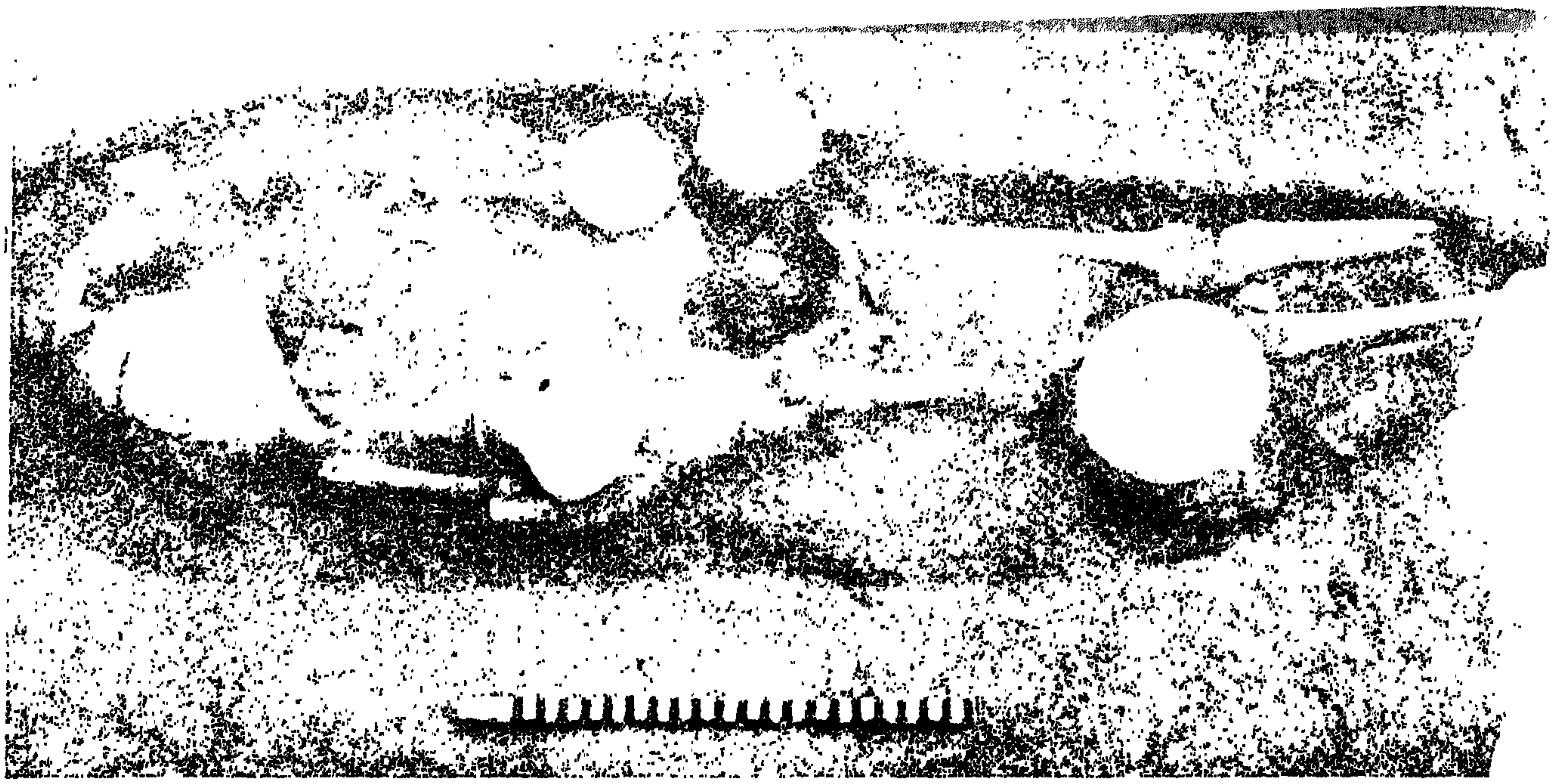


C

D

Ill.26. (*top*). View of the principal mound at Inamgaon shown here from south-west on the right bank of the Ghod river, Poona district, Maharashtra. (*See* p. 125)

Ill. 27. (*bottom*). Settlement Pattern in Late Jorwe Phase, Inamgaon. (*See* p. 125)



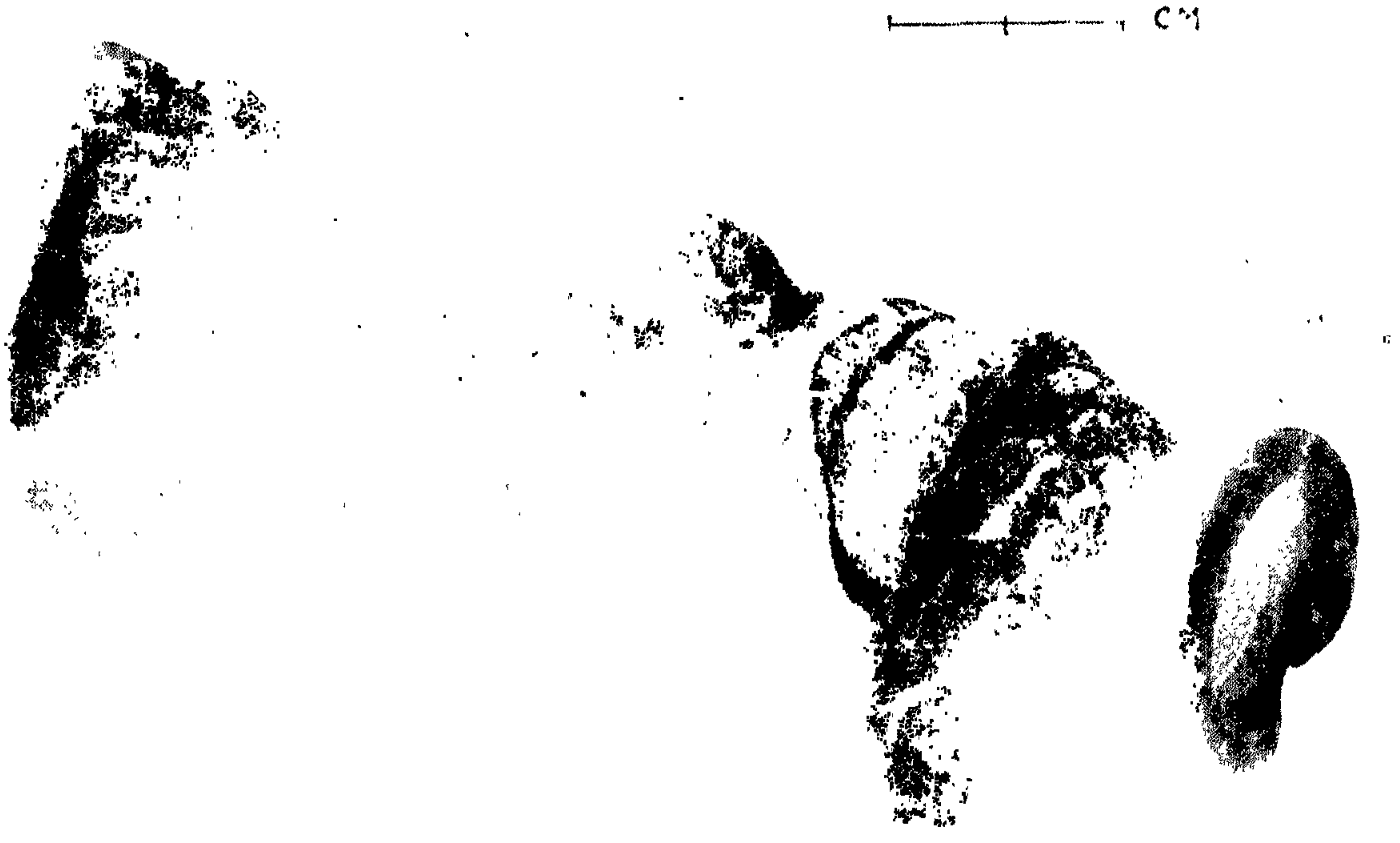
Ill. 28. (*top*). Adult burial within the house floor. The body is laid north-south, five pots kept near the head, arms and leg, Inamgaon. (*See* p. 134)

Ill. 29. (*bottom*). Child burial in an urn with two bowls and a spouted pot from Late Jorwe Phase, Inamgaon. (*See* p. 134)

Ill. 30. A Late Jorwe cup with a rare Swastika painting inside, Inamgaon. (*See* p. 130)

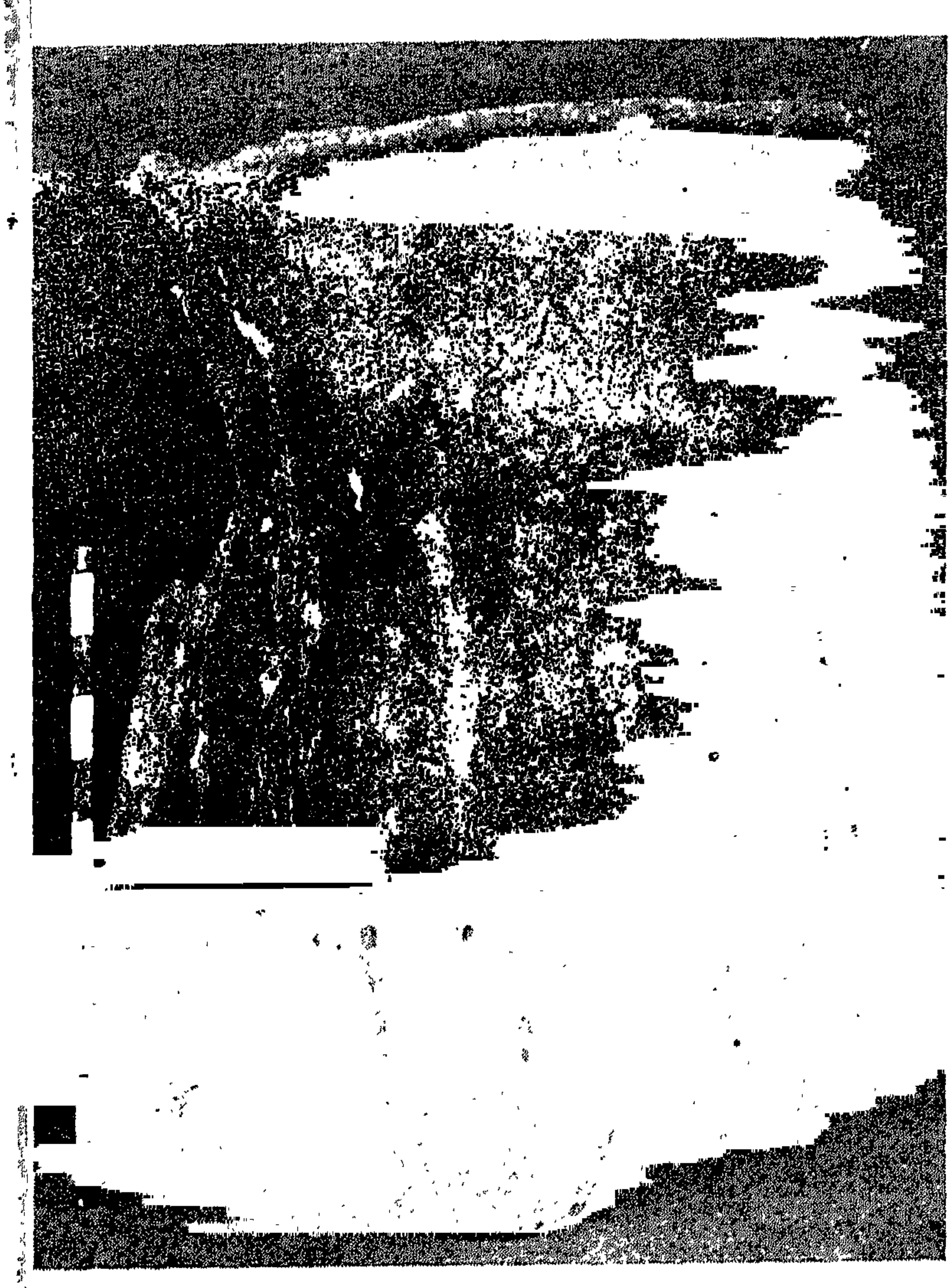
Ill. 31. (*top*). Small headless, terracotta female figurine (goddess) with a contrivance to show it seated or standing on a bull, Early Jorwe Phase, Inamgaon. (*See* p. 127)

Ill. 32. (*bottom*). Painted terracotta zoomorphic figure (bull) from Chandoli. (*See* p. 127)



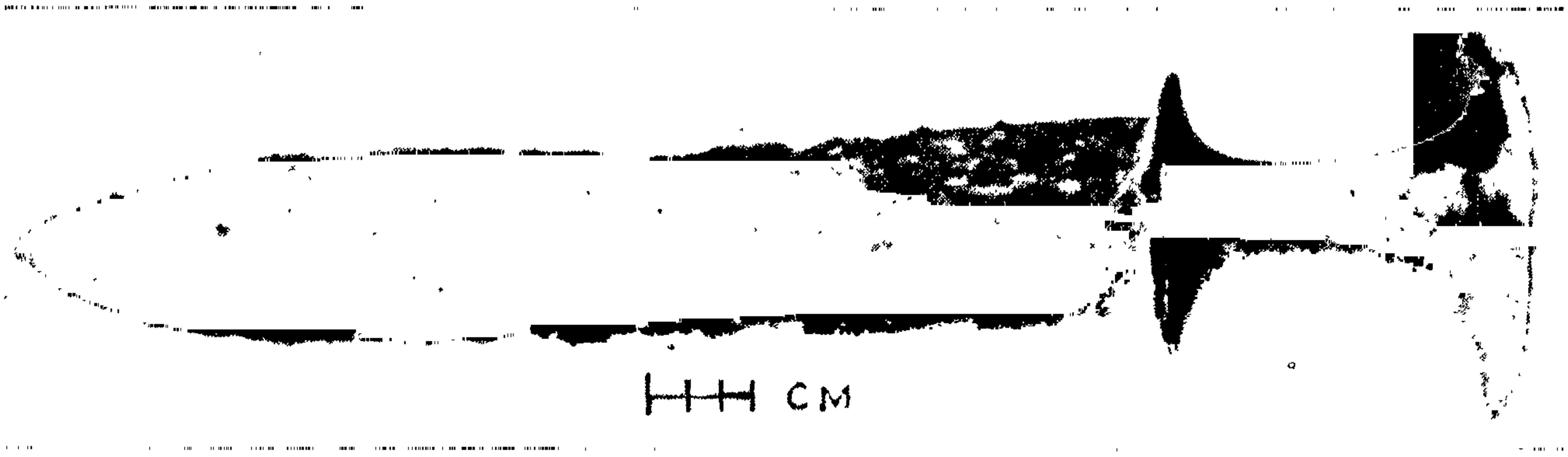
Ill. 33. (*top*). Copper objects (tools and weapons), terracotta figurines (male and female) with a clay box together with its lid, lamps and sharpeners, Jorwe culture. (*See* p. 125)

Ill. 34. (*bottom*). A large kiln for baking pottery with a well made stoking passage for keeping fuel. Inside the kiln there are radiating fuel holes and (cushions) for placing unbaked pots, Inamgaon. (*See* p. 131)

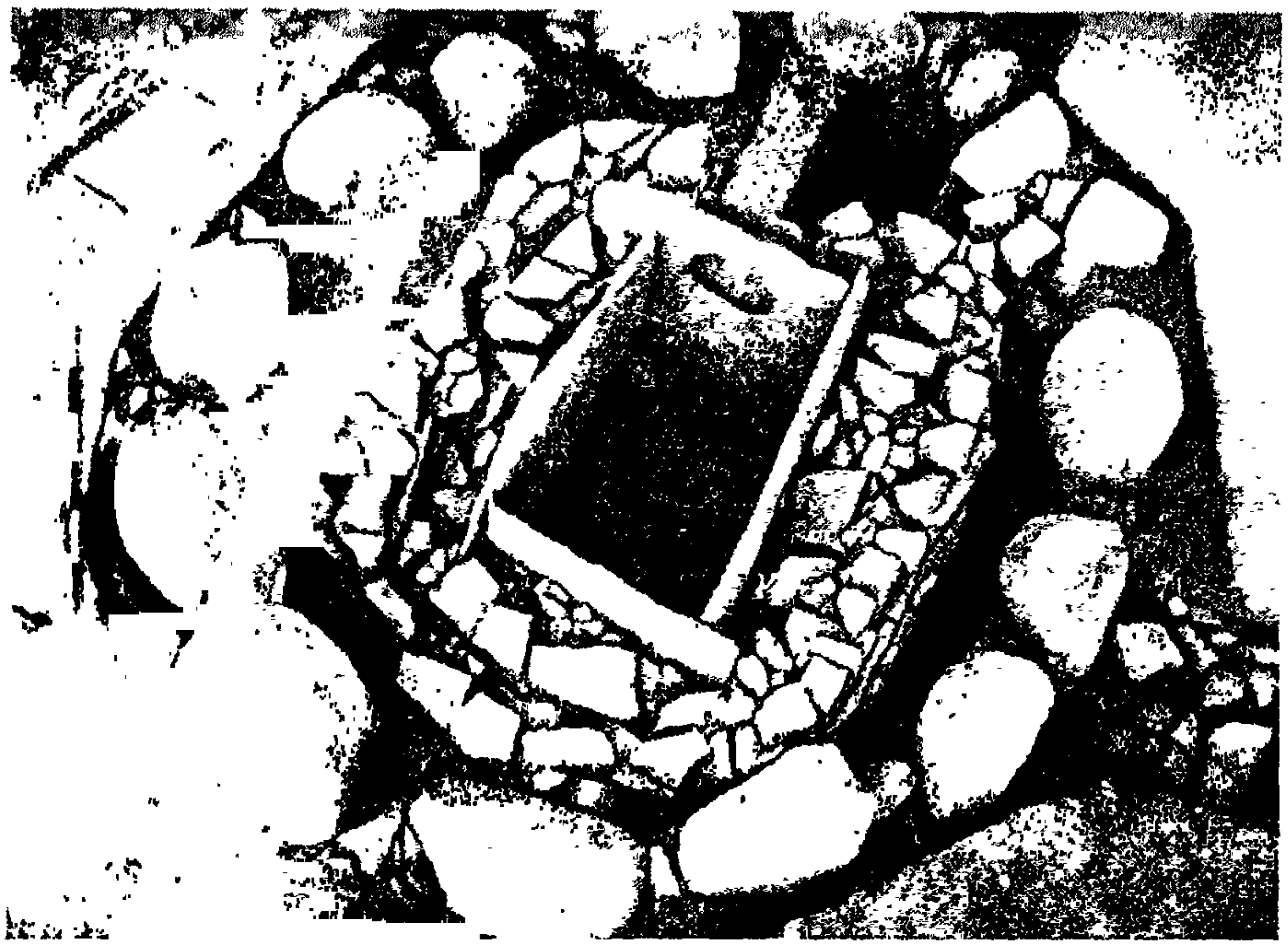


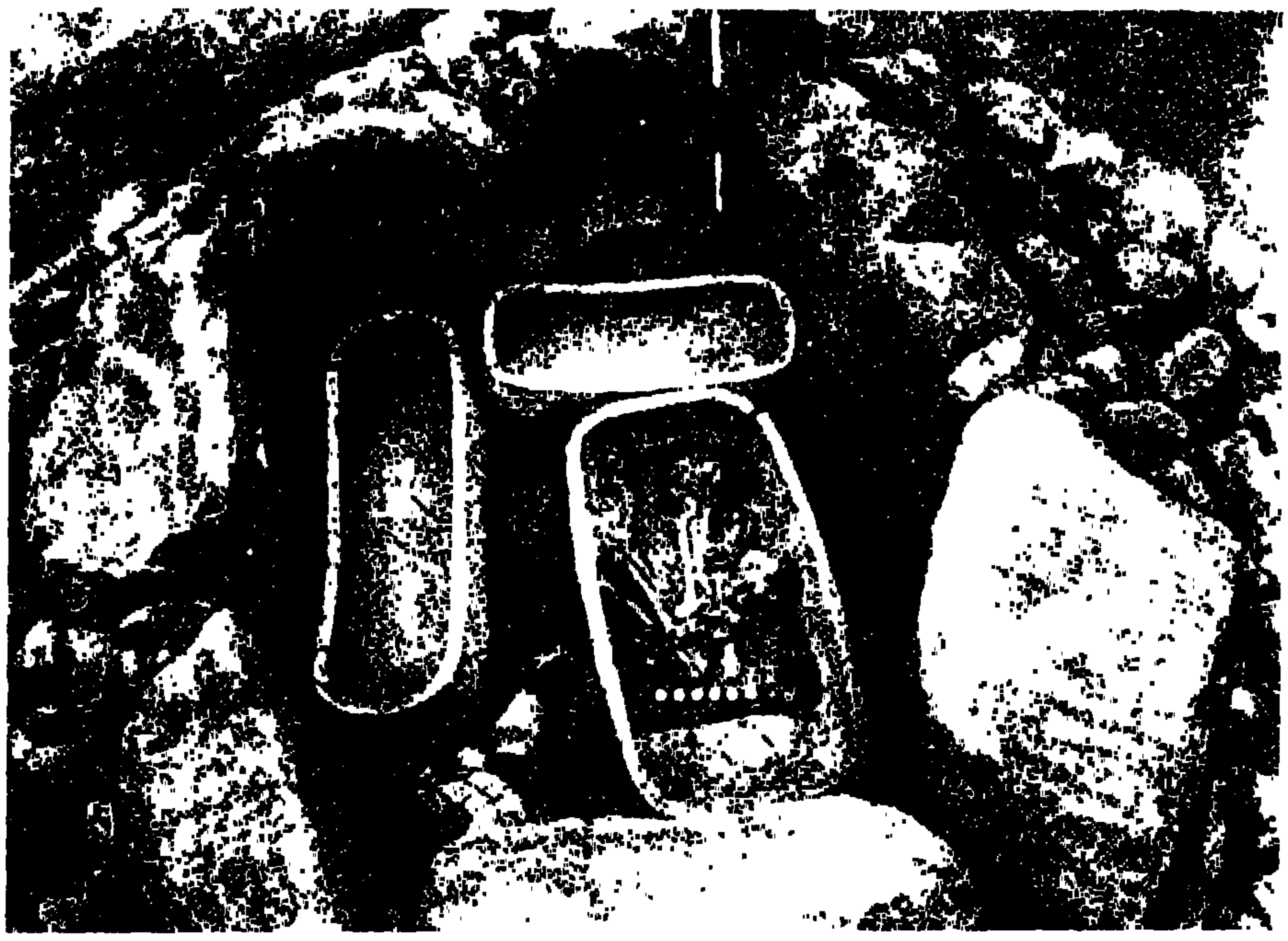
Ill. 35. (*top*). Huge three-legged handmade clay vessel, Inamgaon. (*See* p. 130)

Ill. 36. (*bottom right*). Copper lid with two birds, Khapa, Nagpur. (*See* p. 154)

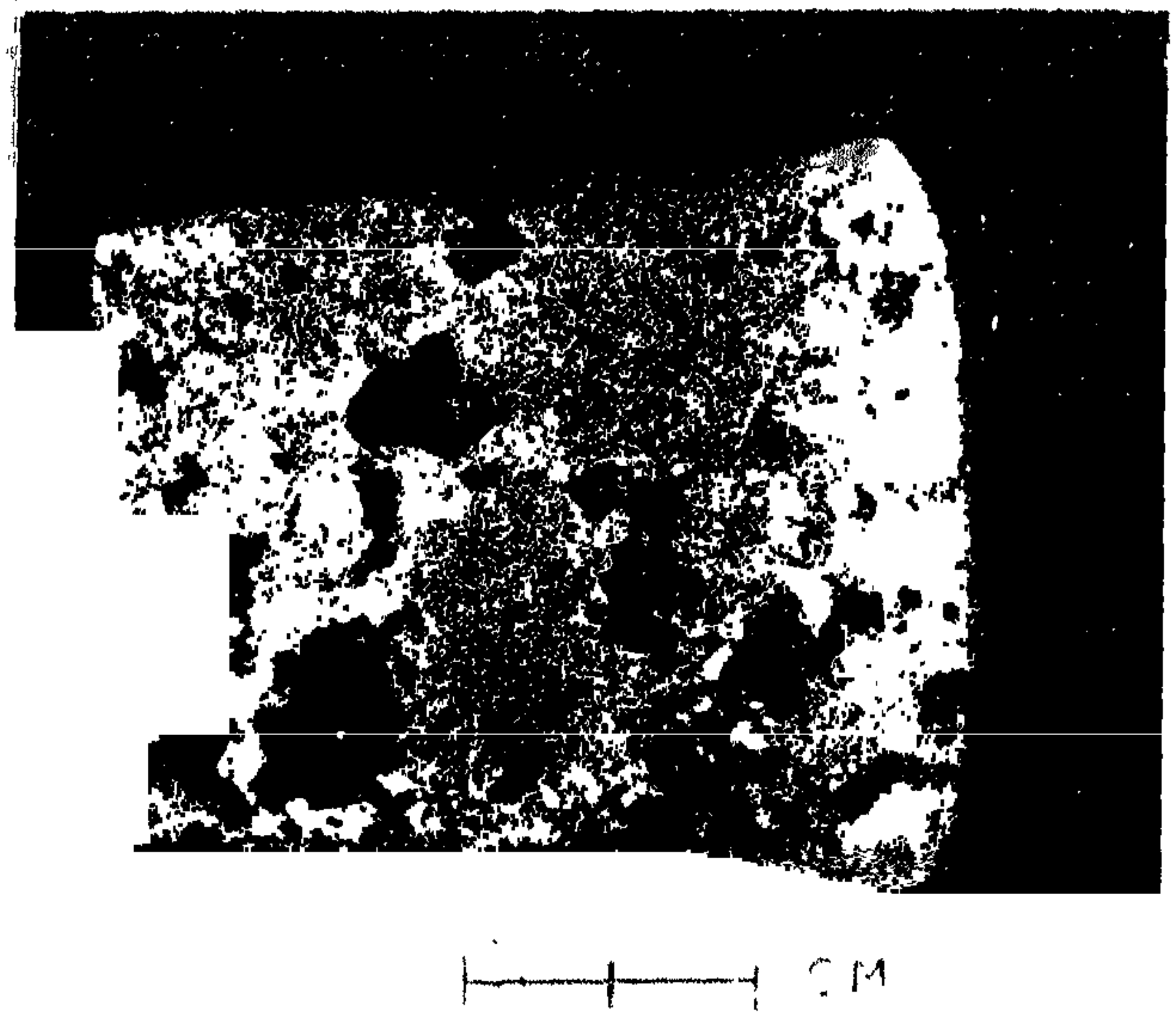


Ill. 37. (*top*). Iron dagger, with a copper hilt, Mahurjhari, Nagpur. (*See* p. 154)

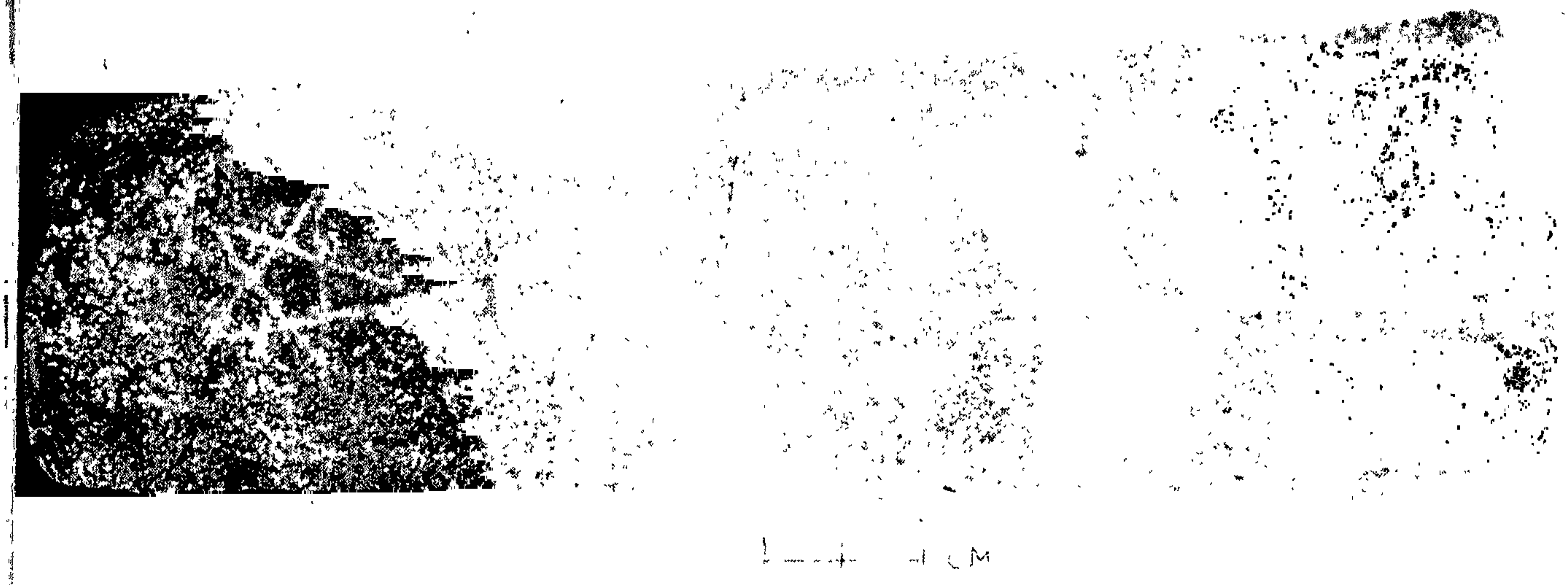




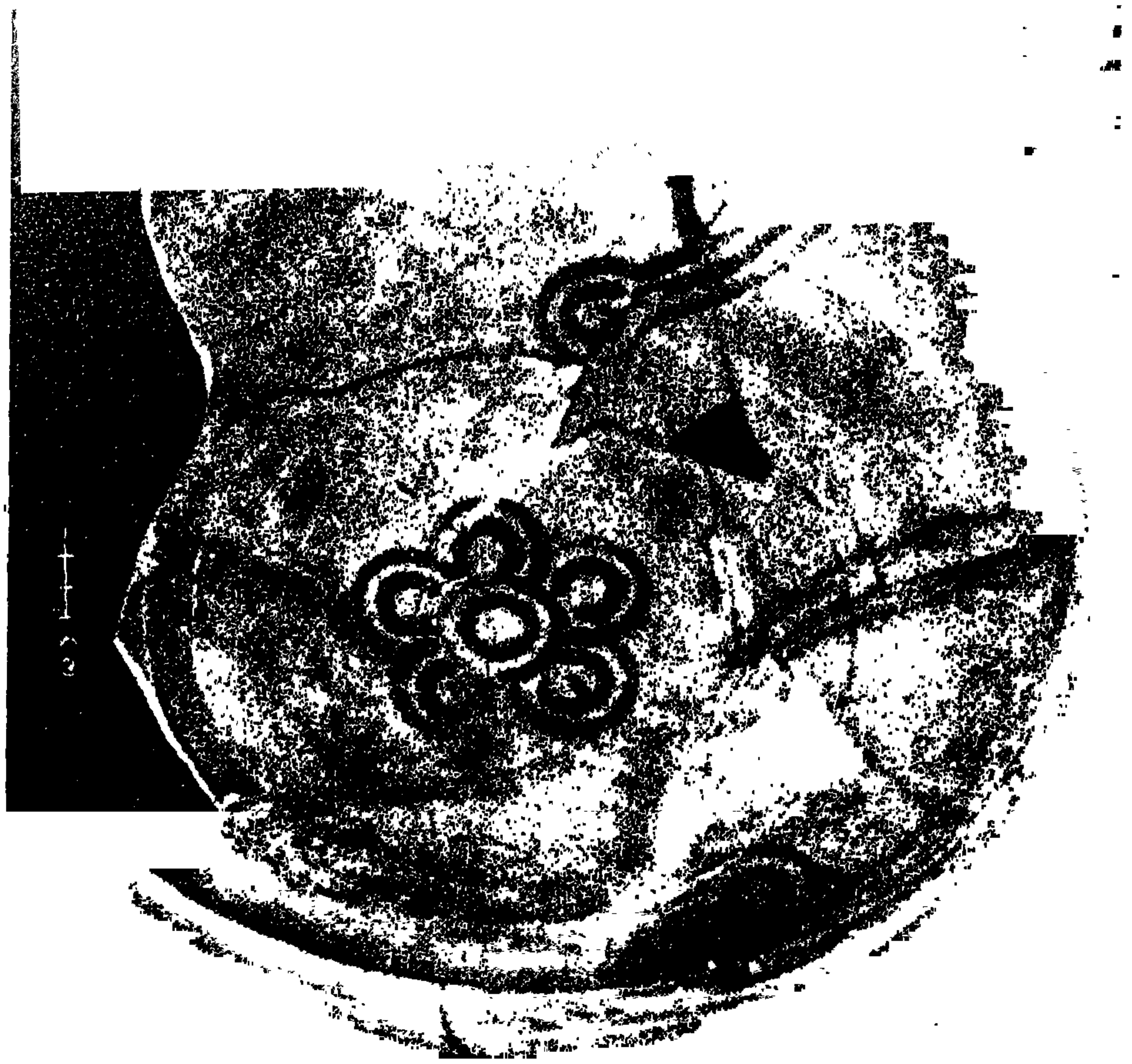
Ill. 38. Megalithic types: 1, (*centre*) Cist with Portholes, Brahmagiri, Karnataka; 2, (*bottom*) Sarcophagi (Terracotta coffin with several legc and cover) from Sanur, Tamilnadu. (*See* p. 152)



Ill. 39. Copper celts from Kiratpur, Uttar Pradesh. (*See* p. 169)

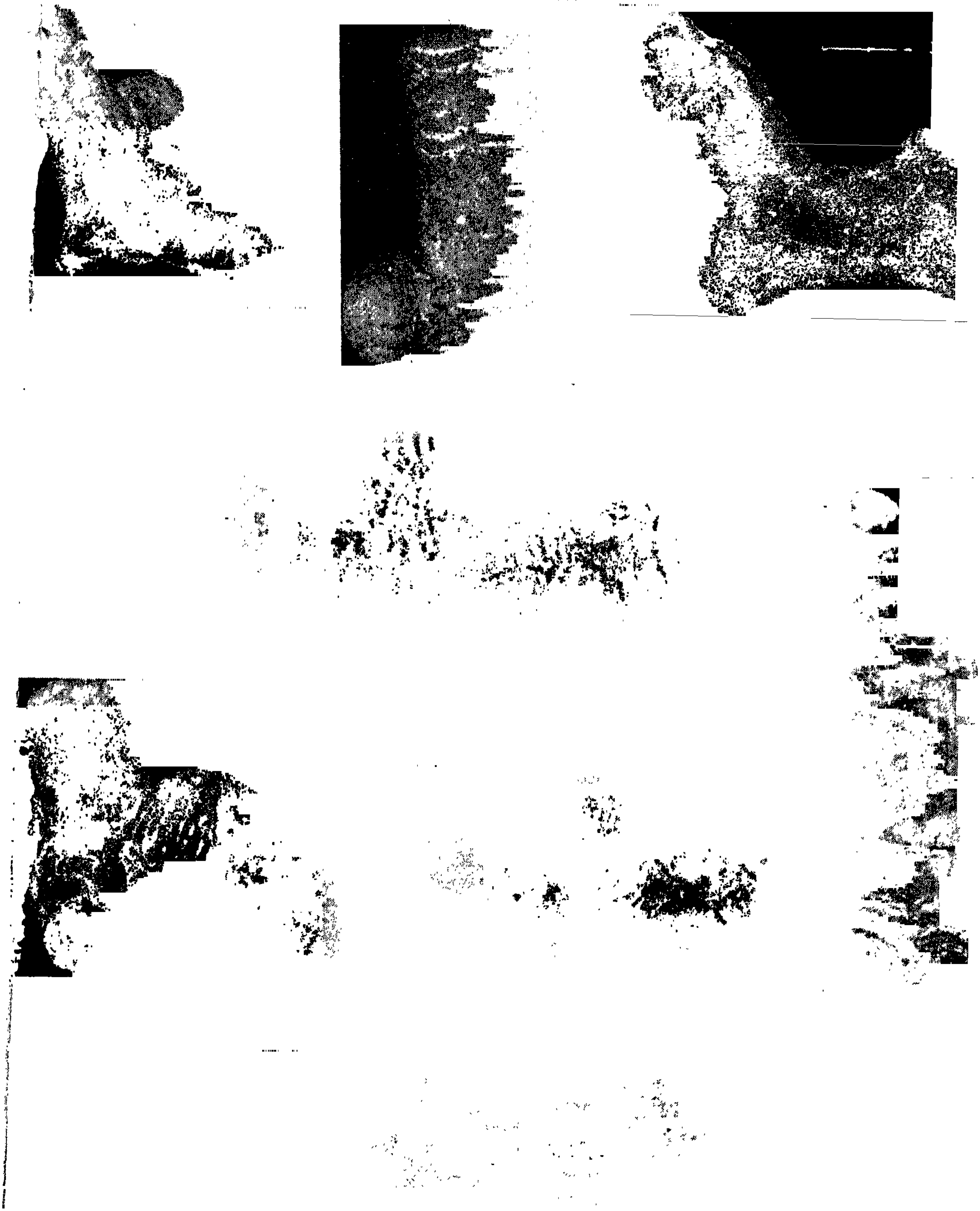


Ill. 40. Plain and incised beads of terracotta, Kiratpur, Uttar Pradesh. (*See* p. 169)



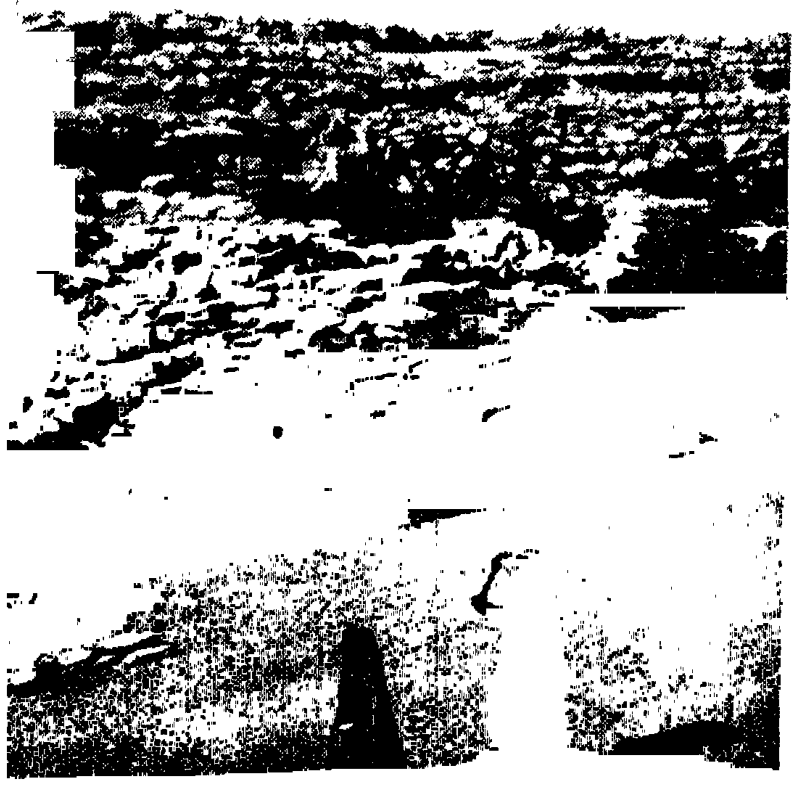
Ill. 41. (*top*). Dish of Painted Grey Ware from Ahichchhatra, Uttar Pradesh. (*See* p. 172 and Appendix)

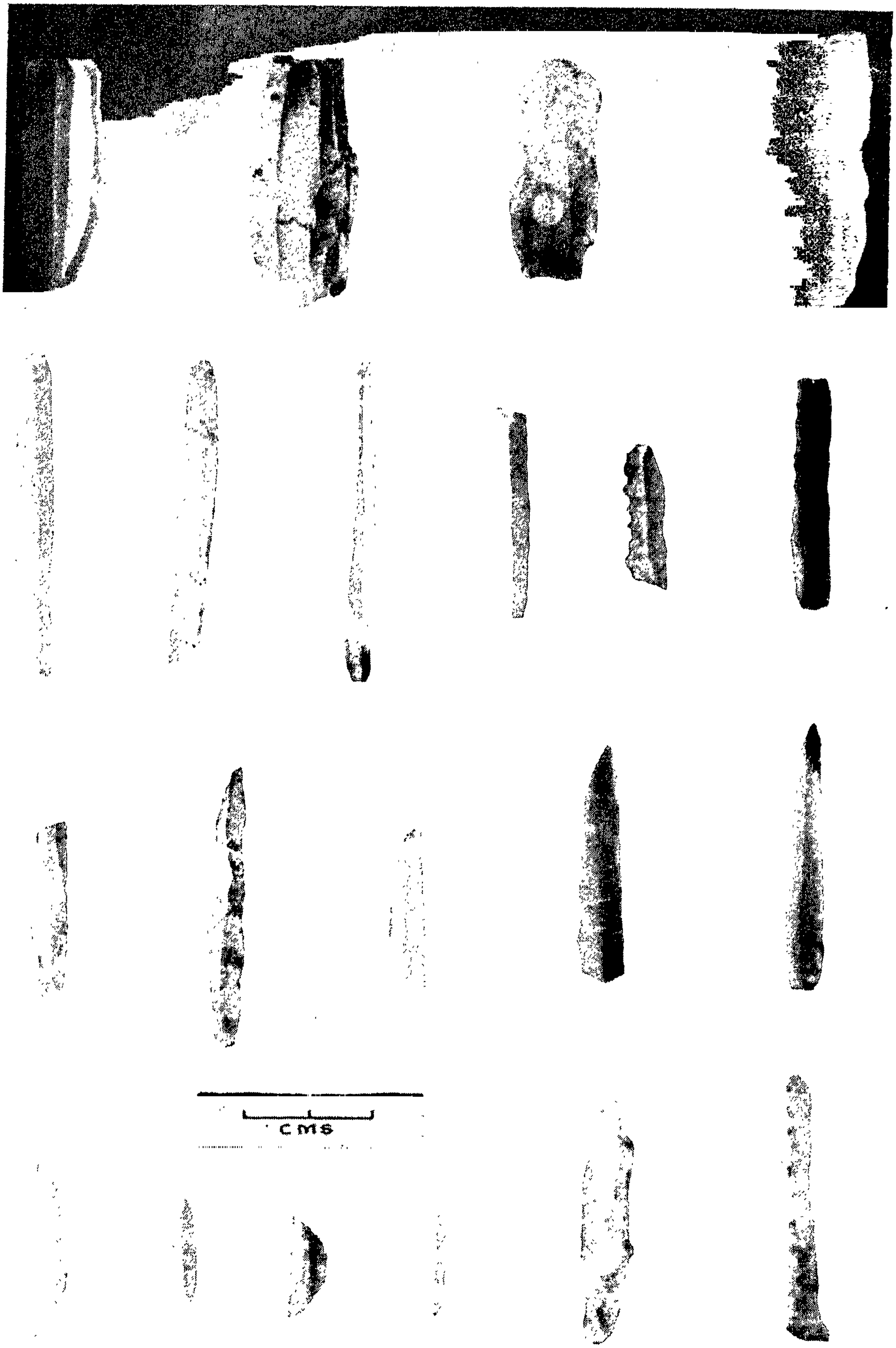
Ill. 42. (*bottom*). Bowl of Painted Grey Ware from Ahichchhatra, Uttar Pradesh. (*See* p. 172 and Appendix)



Ill. 43. Stylized terracotta figurines of bulls found at Kayatha, Madhya Pradesh. (*See* p. 112)

Ill. 44. Surkotada, newly discovered Harappan site, Kutch.





Ill. 45. Cores blades (various types), lunates and drills from Navdatoli, Madhya Pradesh. (*See* p. 118).

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